HEALTHCARE AND POPULATION HEALTH:

COVID 19 Communication, Cooperation and Collaboration

St. Vincent's Hospital Birmingham

Ascension Hospital System

June 30, 2020

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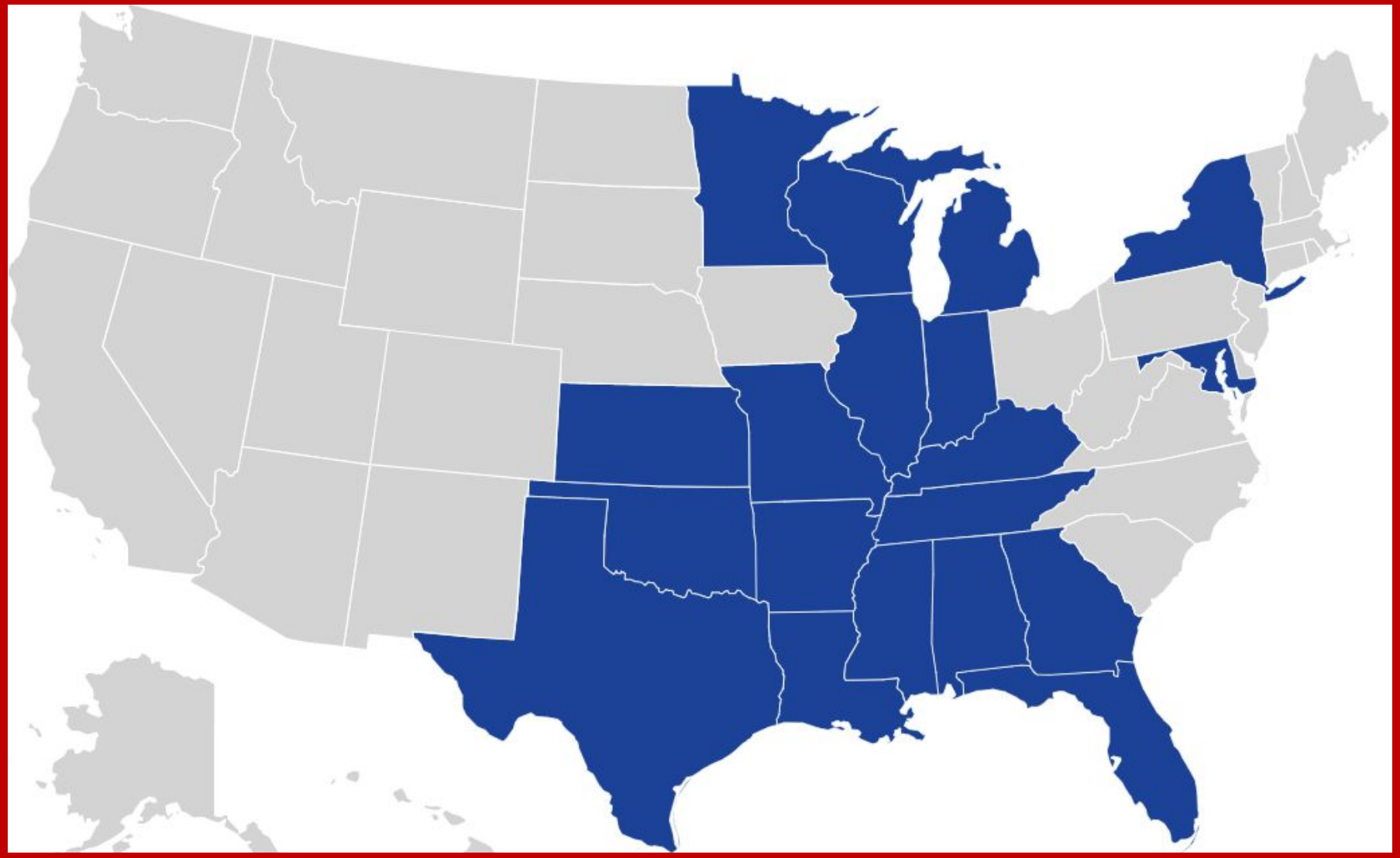
ASCENSION HOSPITAL SYSTEM

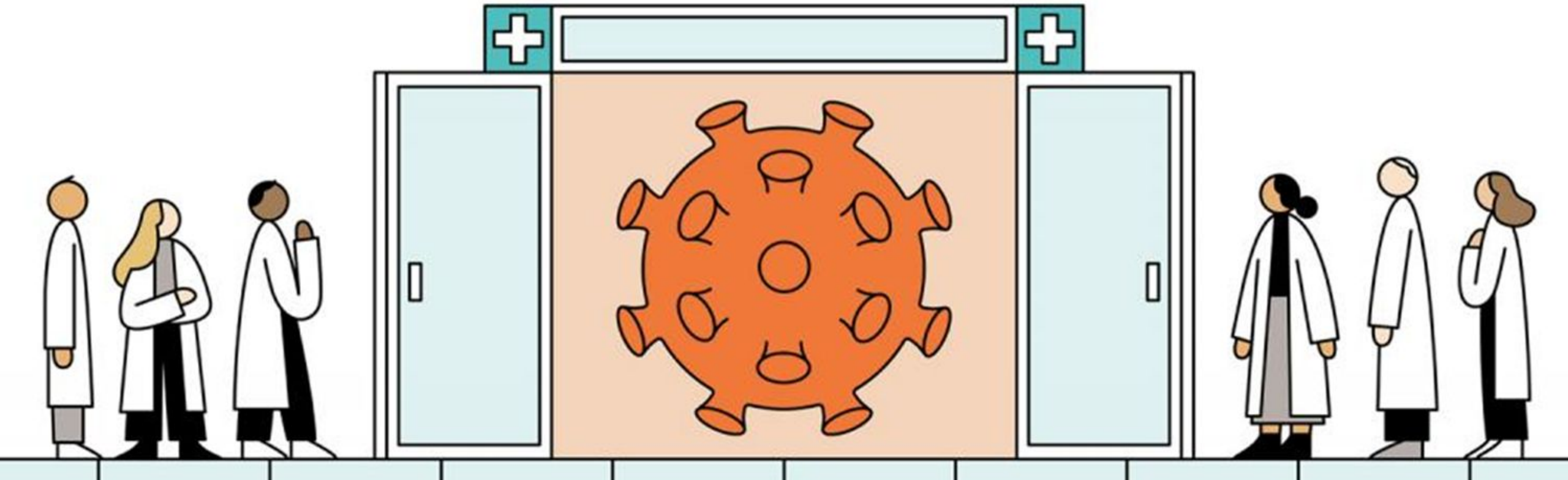


FRUIT OF THE LOOM ULTIMATE FABRIC MASK

FEEDBACK FOR FRANK

LIKE A LONGHORN COW – A POINT HERE AND A POINT THERE AND A LOT OF BULL IN BETWEEN

COVID 19 HAS A VAST IMPACT ON HEALTHCARE RESOURCES AND ON THE HEALTH OF THE POPULATION



THANK YOU TO OUR FELLOW AMERICANS WHO TREAT OUR ILL.

MIKE LUKOVICH

HEALT
H
CARE

PUBLIC
HEALTH

PUBLIC HEALTH DEFINED

"The science and art of preventing disease, prolonging life, and promoting health through the organized efforts and informed choices of society, organizations, public and private communities, and individuals."

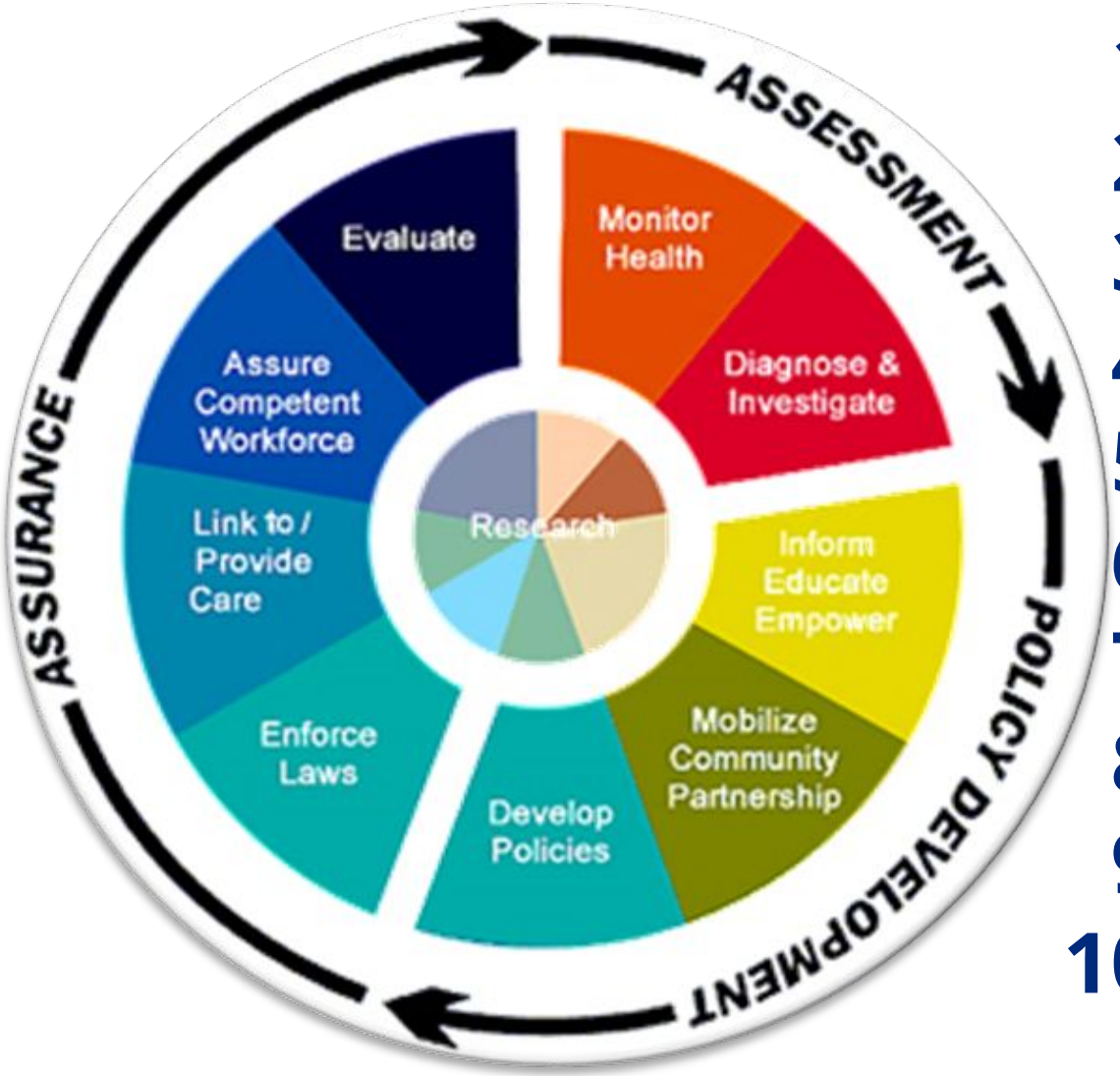
—CEA Winslow

Winslow CEA. The untilled field of public health. Mod Med 1920;2:183–91.

HEALTH CARE IS A PARTNER IN PUBLIC

PUBLIC HEALTH	HEALTHCARE
POPULATION FOCUS	INDIVIDUAL PATIENT FOCUS
PUBLIC HEALTH ETHIC	PERSONAL SERVICE ETHIC
PREVENTION OR PUBLIC HEALTH EMPHASIS	DIAGNOSIS AND TREATMENT EMPHASIS
JOINT LABORATORY AND FIELD INVOLVEMENT	JOINT LABORATORY AND PATIENT INVOLVEMENT
CLINICAL SCIENCES PERIPHERAL TO PROFESSIONAL TRAINING	CLINICAL SCIENCES ESSENTIAL TO PROFESSIONAL TRAINING
PUBLIC SECTOR BASIS	PRIVATE SECTOR BASIS

TEN ESSENTIAL PUBLIC HEALTH SERVICES



1. Monitor Health
2. Diagnose and Investigate
3. Inform, Educate, Empower
4. Mobilize Community Partnership
5. Develop Policies
6. Enforce Laws
7. Link to/Provide Care
8. Assure Competent Workforce
9. Evaluate
10. Research

PREVENTION THROUGH POLICY

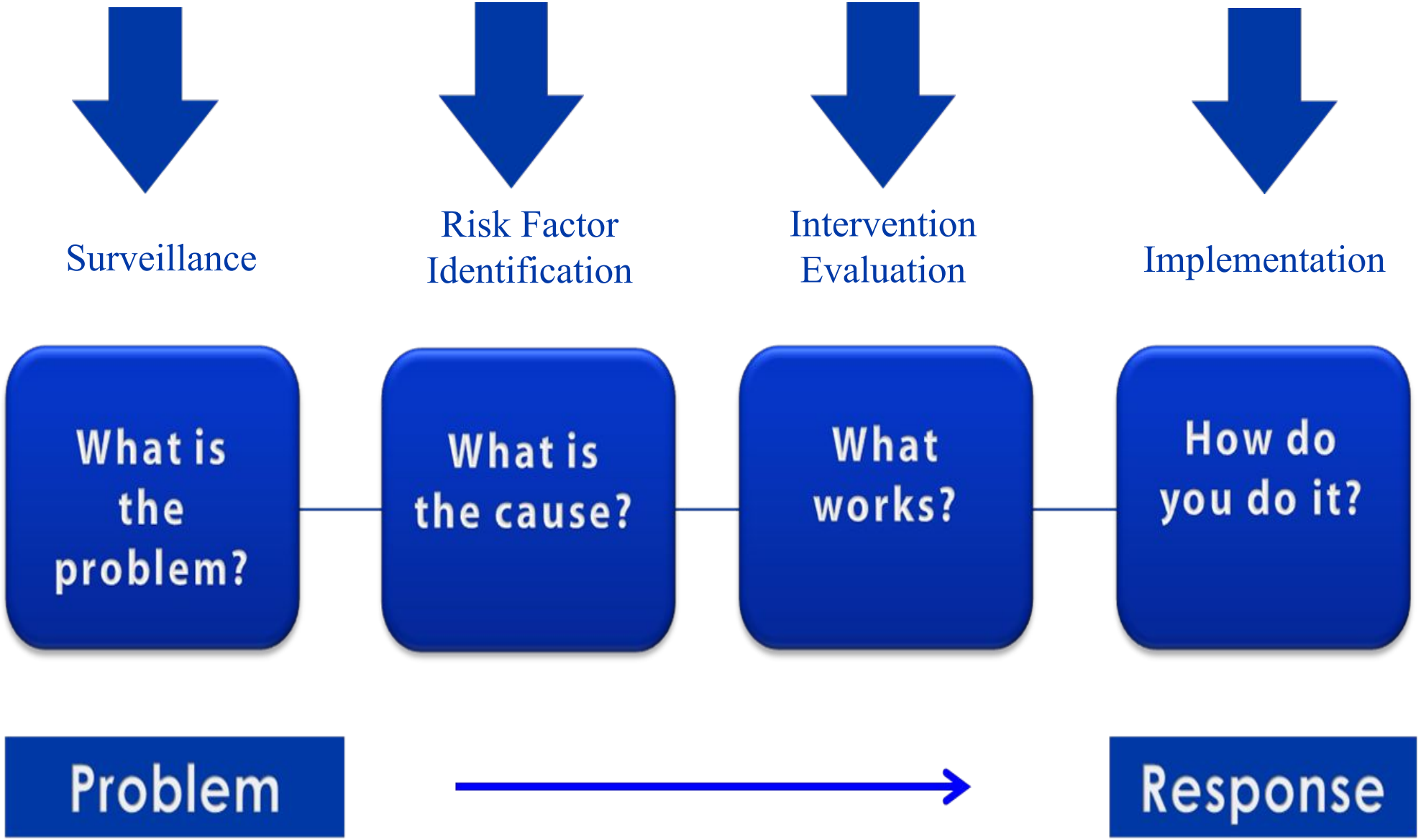
TOBACCO LAWS

LAWS BANNING SMOKING IN PUBLIC PLACES

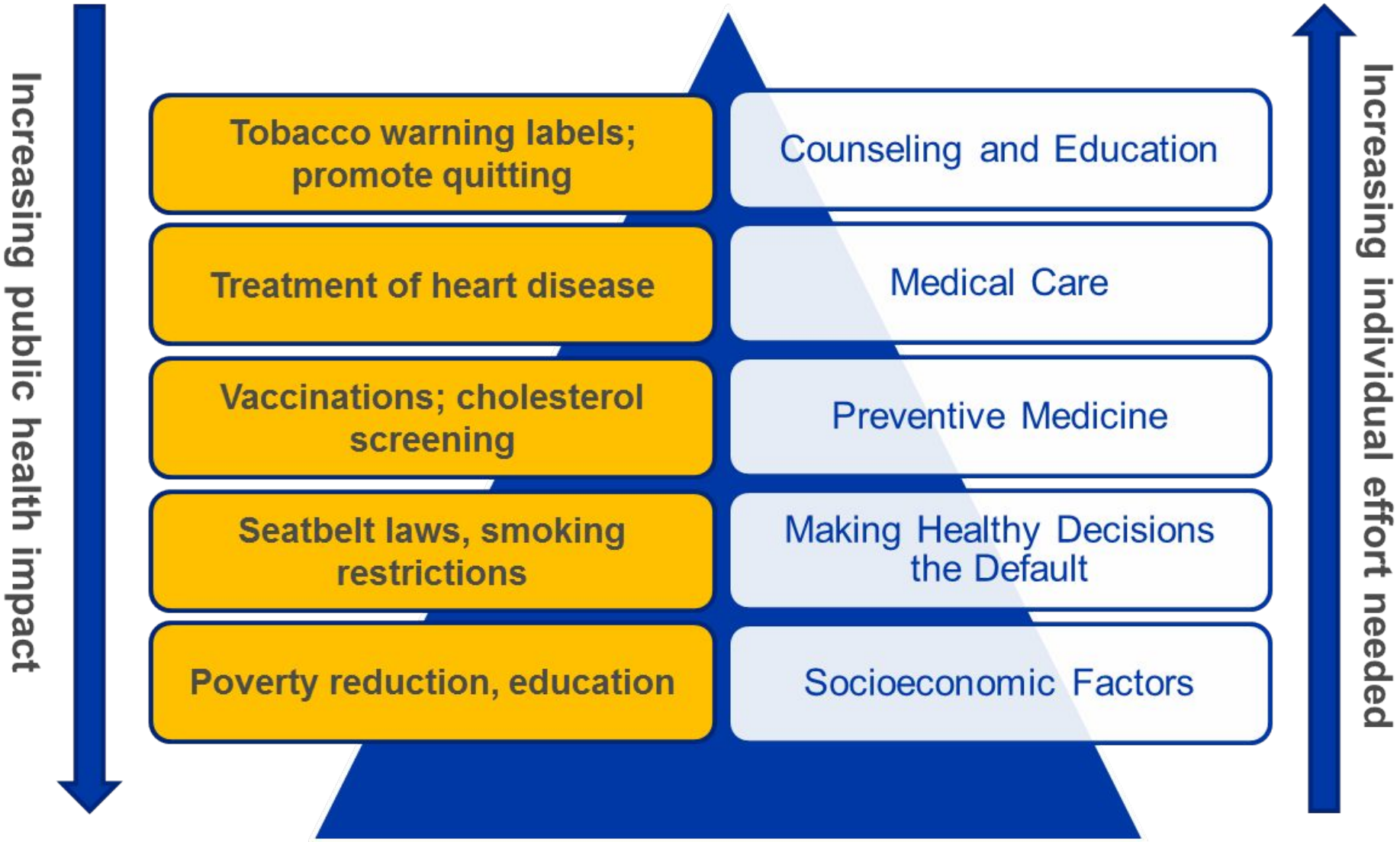
OBESITY

FOOD LABELING AND PROMOTION OF PHYSICAL ACTIVITY

A PUBLIC HEALTH APPROACH



HEALTH IMPACT PYRAMID

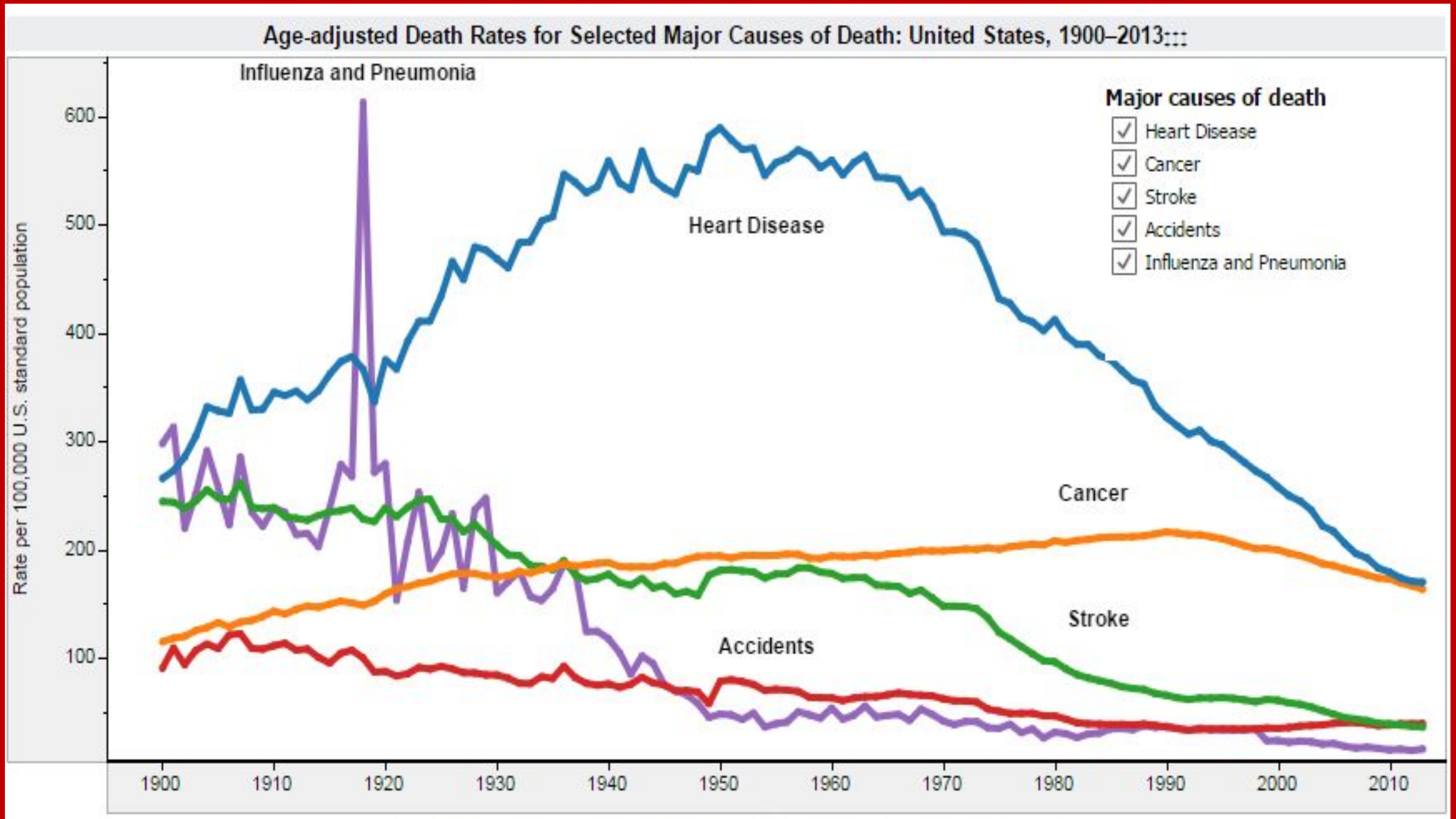


Frieden TR. Framework for public health action: the health impact pyramid. Am J Public Health 2010;100:590–5.

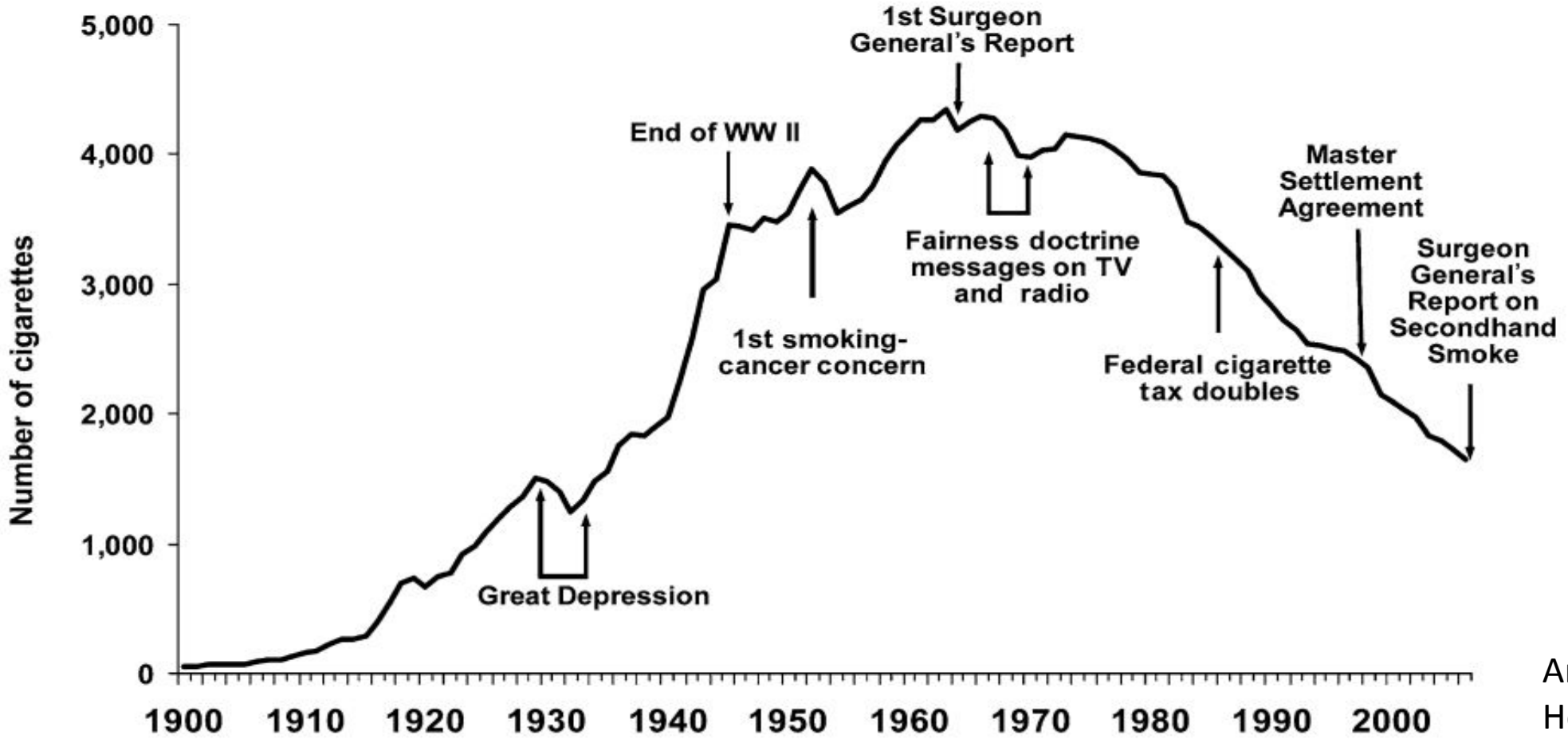
TEN GREAT PUBLIC HEALTH ACHIEVEMENTS -- US 1900-2000

1. Vaccination
2. Motor-vehicle safety
3. Safer workplaces
4. Control of infectious diseases
5. Decline in deaths from coronary heart disease and stroke
6. Safer and healthier foods
7. Healthier mothers and babies
8. Family planning
9. Fluoridation of drinking water
10. Recognition of tobacco use as a health hazard

MMWR 48:241–43


Age-adjusted Death Rates for Selected Major Causes of Death: United States, 1900–2013
Influenza and Pneumonia
Major causes of death
Heart Disease
Cancer
Stroke
Accidents
Influenza and Pneumonia
Heart Disease
Cancer
Stroke
Accidents
Rate per 100,000 U.S. standard population
600
500
400
300
200
100
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010

TREND IN CIGARETTE CONSUMPTION UNITED STATES, 1900–2006



Annu. Rev. Public Health 2011. 32:5–22

Common public health responses to infectious disease outbreaks, including COVID-19

- Disease surveillance
- Testing
- Contact tracing
- Administering vaccinations and drugs
- Managing mass fatalities
- Forward thinking and planning for the next emergency

SURVEILLANCE: Identify instances of disease in communities categorized by demographics and spread of diseases to control or reduce the disease spread to ultimately save lives

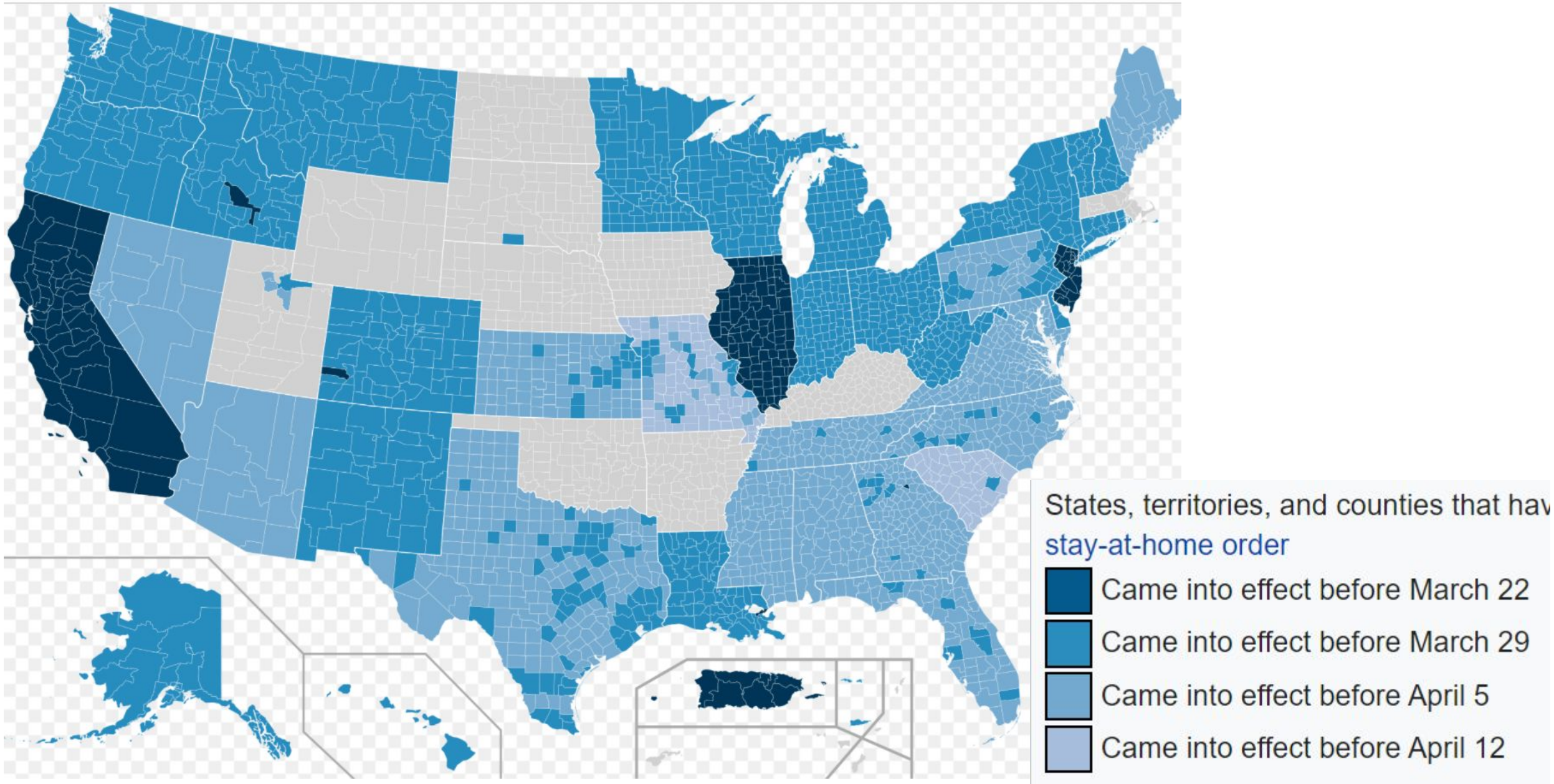
TESTING: Implement for surveillance in communities to identify who is infected

CONTACT TRACING: Intervene on a case-by-case basis to identify cases, reduce transmission of infection and contain spread

NOVEL CORONAVIRUS TIMELINE

- **Dec. 31:** In Wuhan, China, reports excess of people with pneumonia due to an unknown cause. Between Dec. 31 and Jan. 3, national authorities in China report 44 cases to the World Health Organization.
- **Jan. 12:** Chinese health officials share the genetic sequence of the novel coronavirus for countries to use in developing specific diagnostic kits.
- **Jan. 21:** The CDC confirms that a person in Washington state who returned from Wuhan on Jan. 15 tested positive for the respiratory disease.
- **Jan. 30:** The CDC confirms the first human-to-human transmission in the United States. President Donald Trump announces the formation of a coronavirus task force to lead America's response to the outbreak. The WHO emergency committee makes a nearly unanimous decision to declare a public health emergency of international concern.
- **March 11:** The WHO declares COVID-19 a pandemic.
- **March 16:** Coronavirus vaccine testing begins in the U.S. Even if the research goes well, a vaccine wouldn't be available for widespread use for 12 to 18 months, says Dr. Anthony Fauci of the U.S. National Institutes of Health.

TIMING OF STAY AT HOME ORDER VARIED BY STATE



COVID19 IS A CORONAVIRUS

- Coronaviruses are common viruses, some of which cause illness in people and others in animals
- Some infect animals and then spread to people; examples include:
  - Middle East Respiratory Syndrome (MERS)
  - Severe Acute Respiratory Syndrome (SARS)
  - Coronavirus Disease 2019 (COVID-19)
- Common coronaviruses include some that cause mild upper-respiratory illnesses, like the common cold
- Coronavirus disease 2019 or COVID-19 is a respiratory illness that can spread from person to person.
- The impact of a coronavirus depends on how transmissible they are among people and the rate of immunity among people. SARS 2 all people were susceptibles

COVID-19 TRANSMISSION

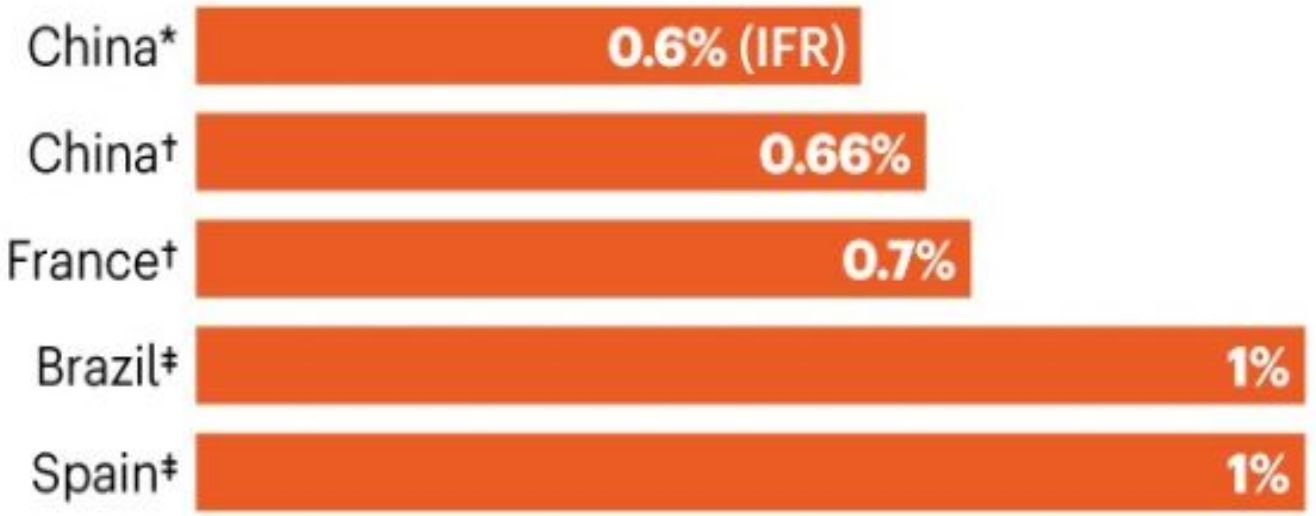
- COVID-19 spreads the same way the flu and other respiratory diseases spread:
  - Through respiratory droplets produced when an infected person coughs or sneezes.
  - These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs.
  - Between people who are in close contact with one another (within about 6 feet).

COVID19 SYMPTOMATOLOGY

- Symptoms of COVID-19 are:
  - Fever
  - Cough
  - Shortness of breath
- Symptoms appear 2 to 14 days after exposure. The average incubation period of COVID-19 is reported to be about 5 days.
- 80%of patients with confirmed COVID-19 have mild symptoms.
- In very severe cases, patients with COVID-19 develop bilateral pneumonia. In some cases, COVID-19 can be fatal.

HOW DEADLY IS COVID 19?

The infection fatality rate (IFR) is the proportion of people with COVID-19 who will die from the disease. Estimates are for specific regions, and can vary depending on demographics, health-care access and study methodology.

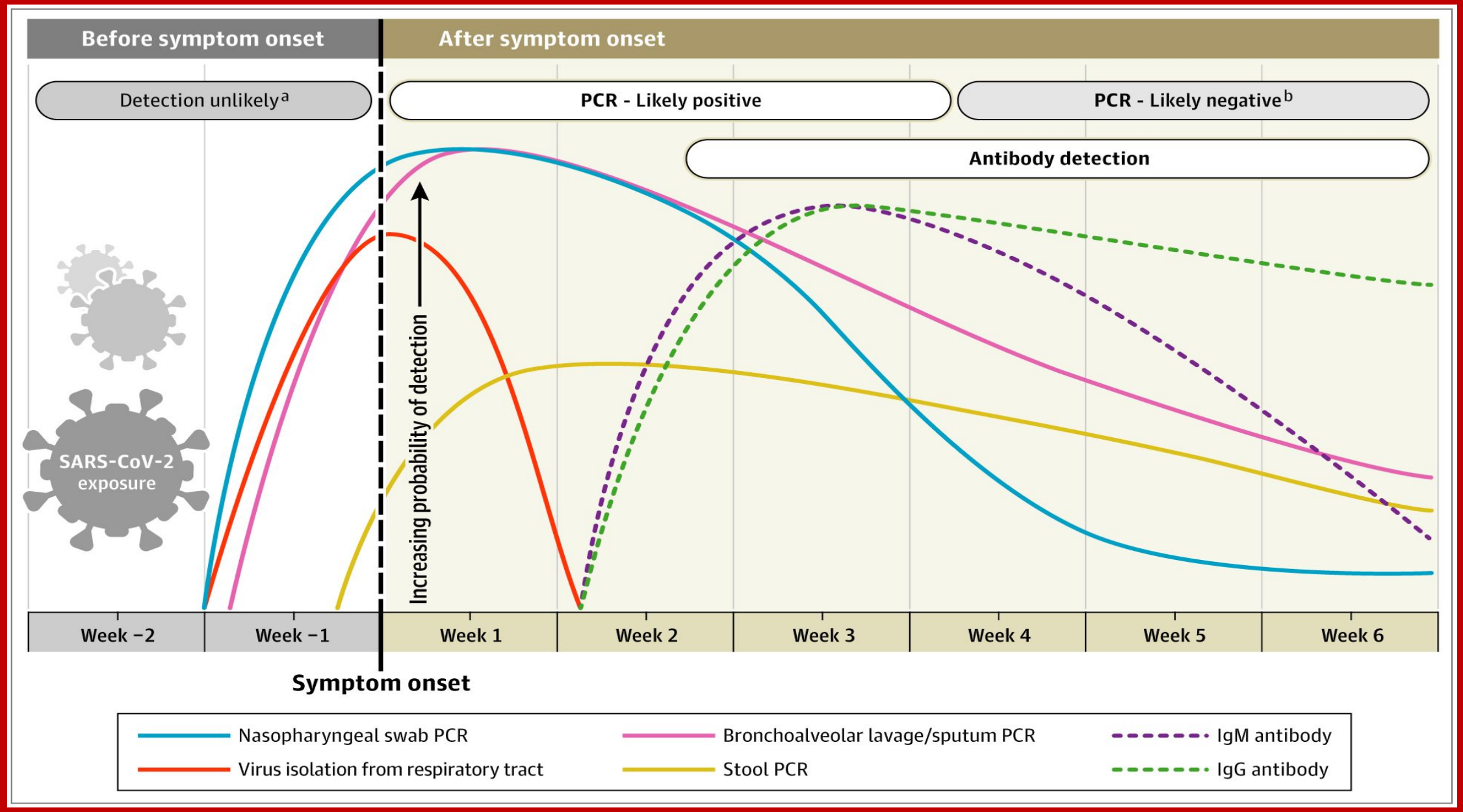


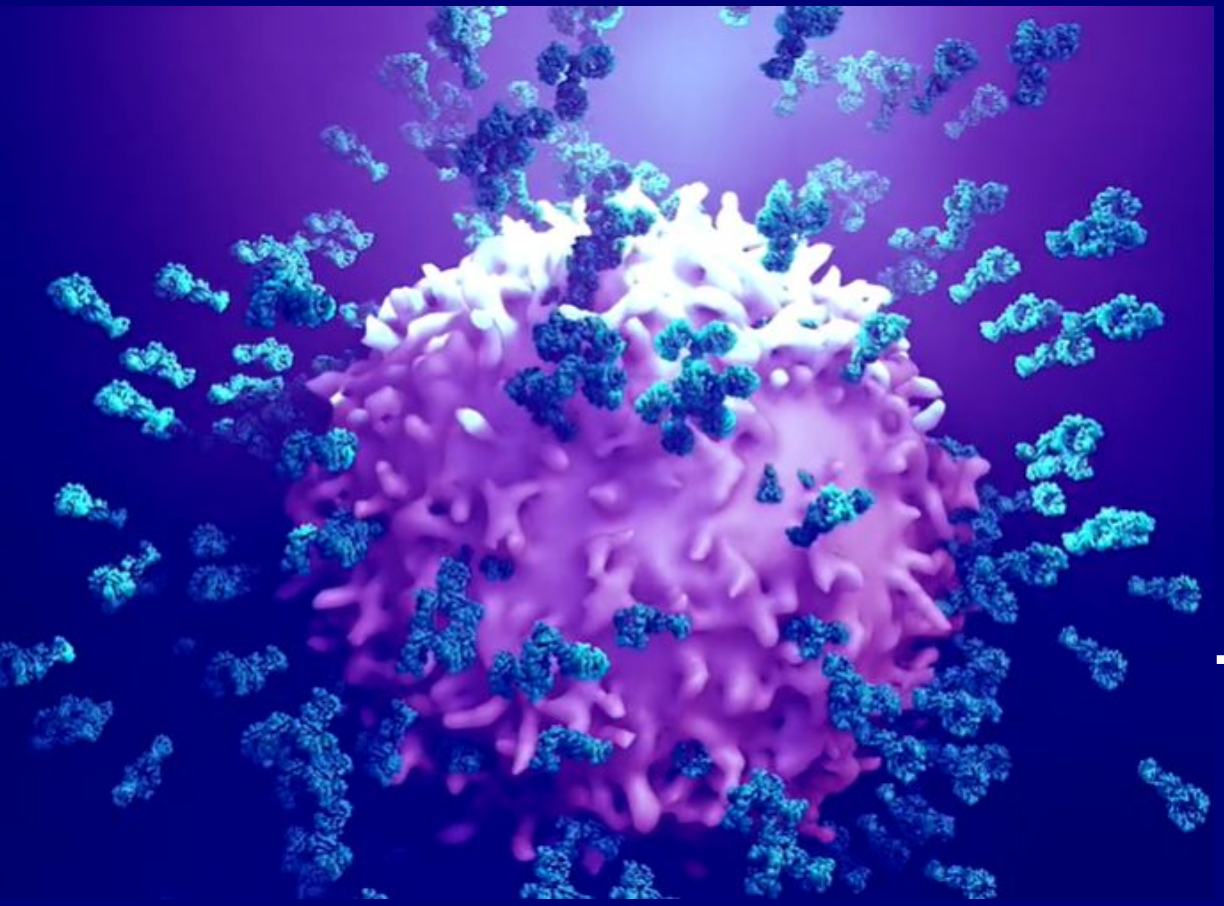
*Estimate based on natural experiment.
†Estimate based on modelling.
‡Estimate based on prevalence data.

©nature

TESTING

COVID 19: DIAGNOSIS OF ACTIVE AND PRIOR INFECTION

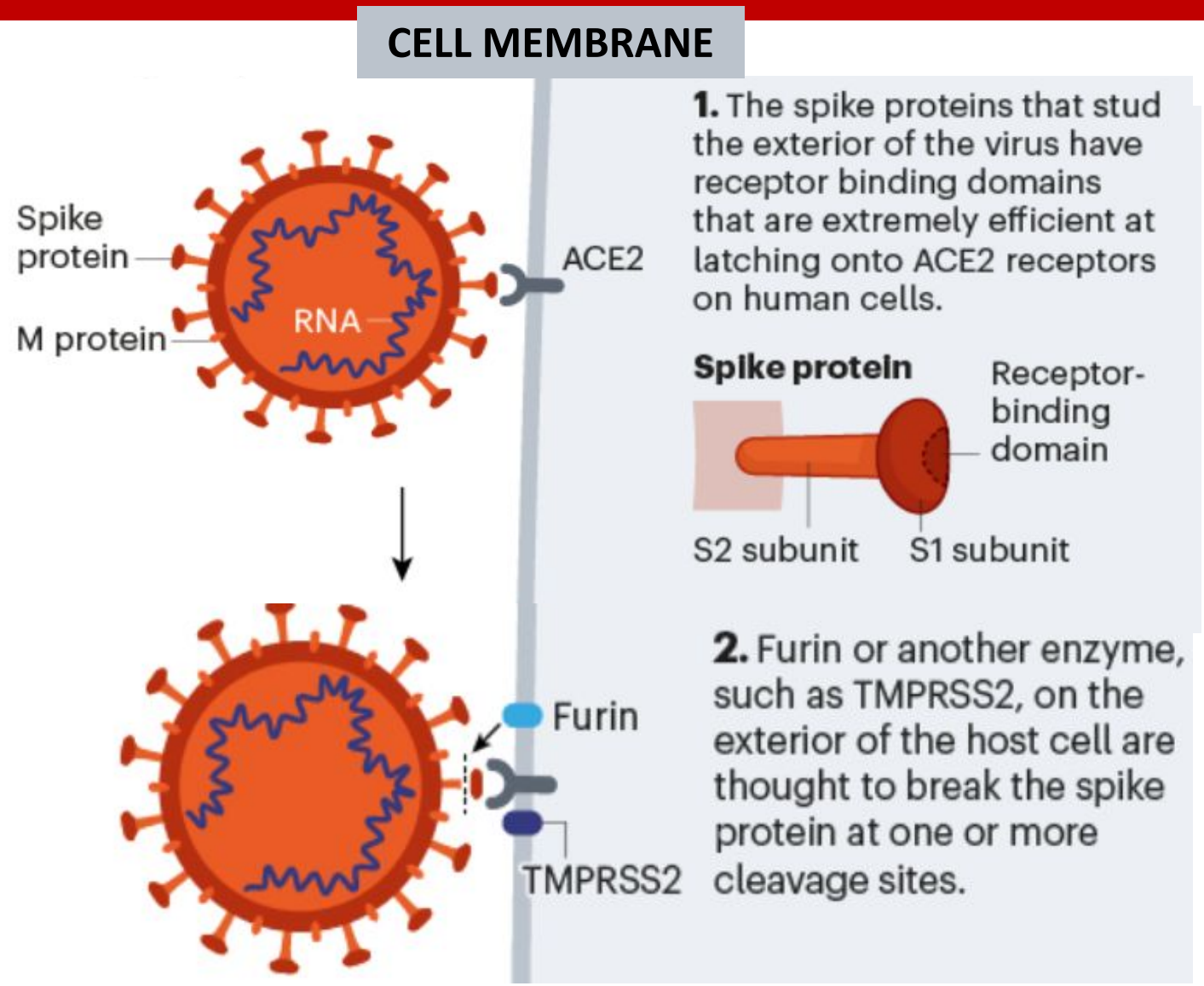




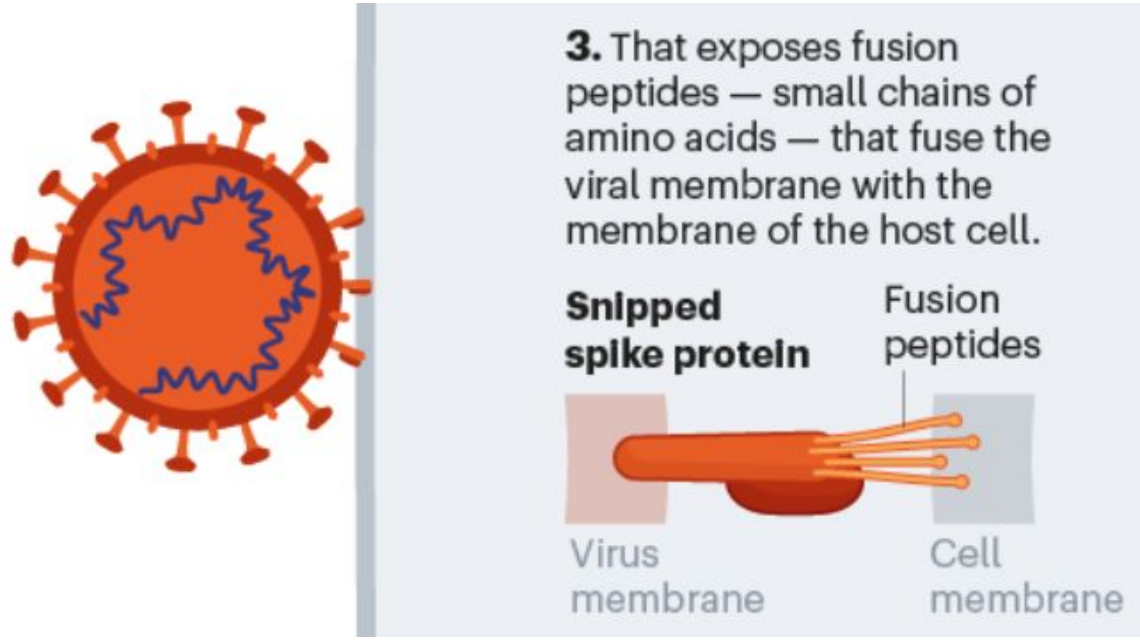
Antibody tests OK for sero-surveys but not for guiding individual patients and no benefit to healthcare and other employers

VIRAL PATHOGENESIS
VACCINE DEVELOPMENT
TREATMENT

How COVID 19 virus causes disease

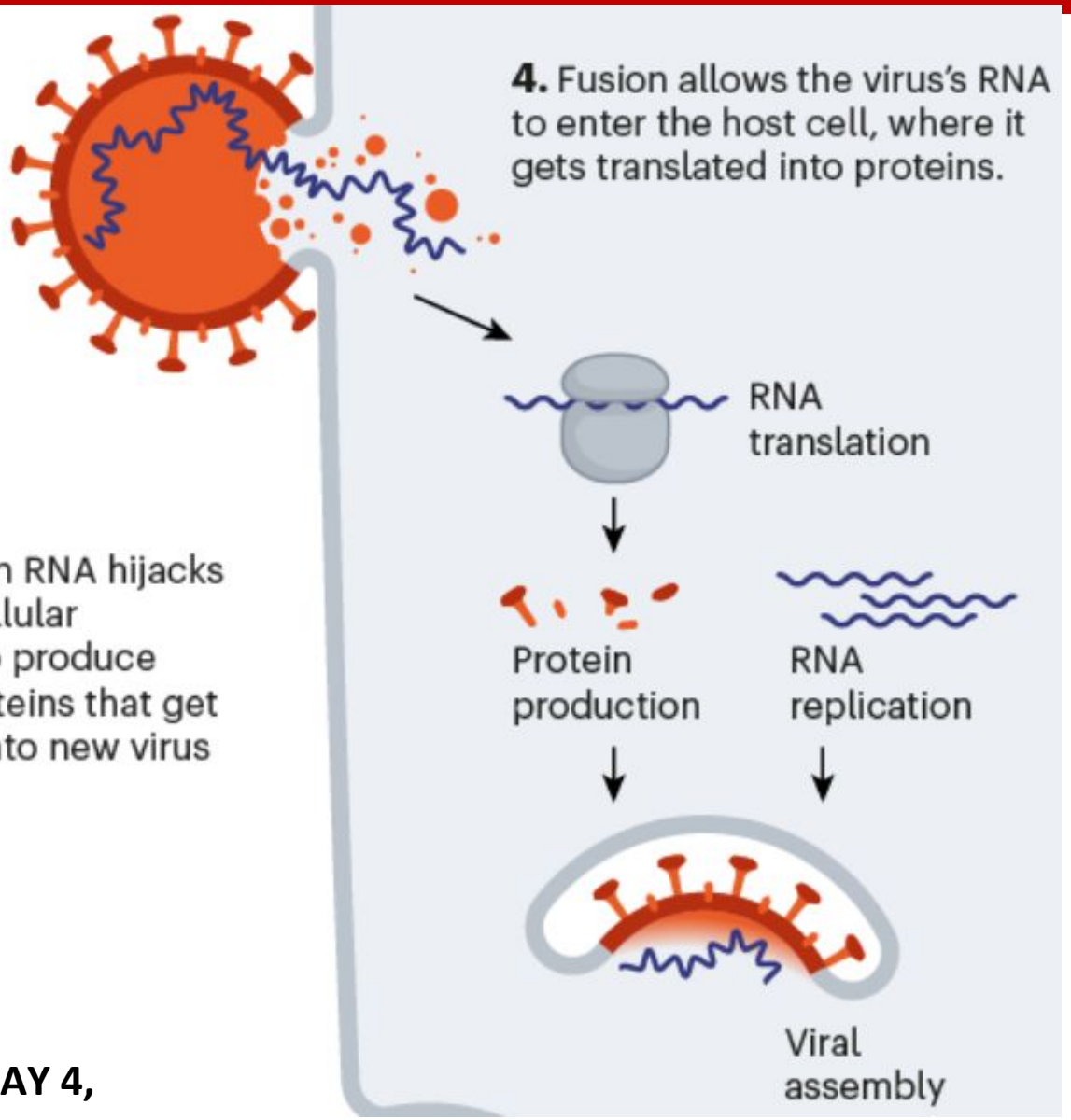


MOST VACCINES ARE AGAINST THE RECEPTOR BINDING DOMAIN OR AGAINST THE SPIKE PROTEIN ITS MOST PATHOGENIC PORTION. THE ANTIBODIES PRODUCED BY VARIOUS METHODS ALSO TARGET THE RECEPTOR BINDING DOMAIN.



NATURE MAY 4, 2020

How COVID 19 virus causes disease

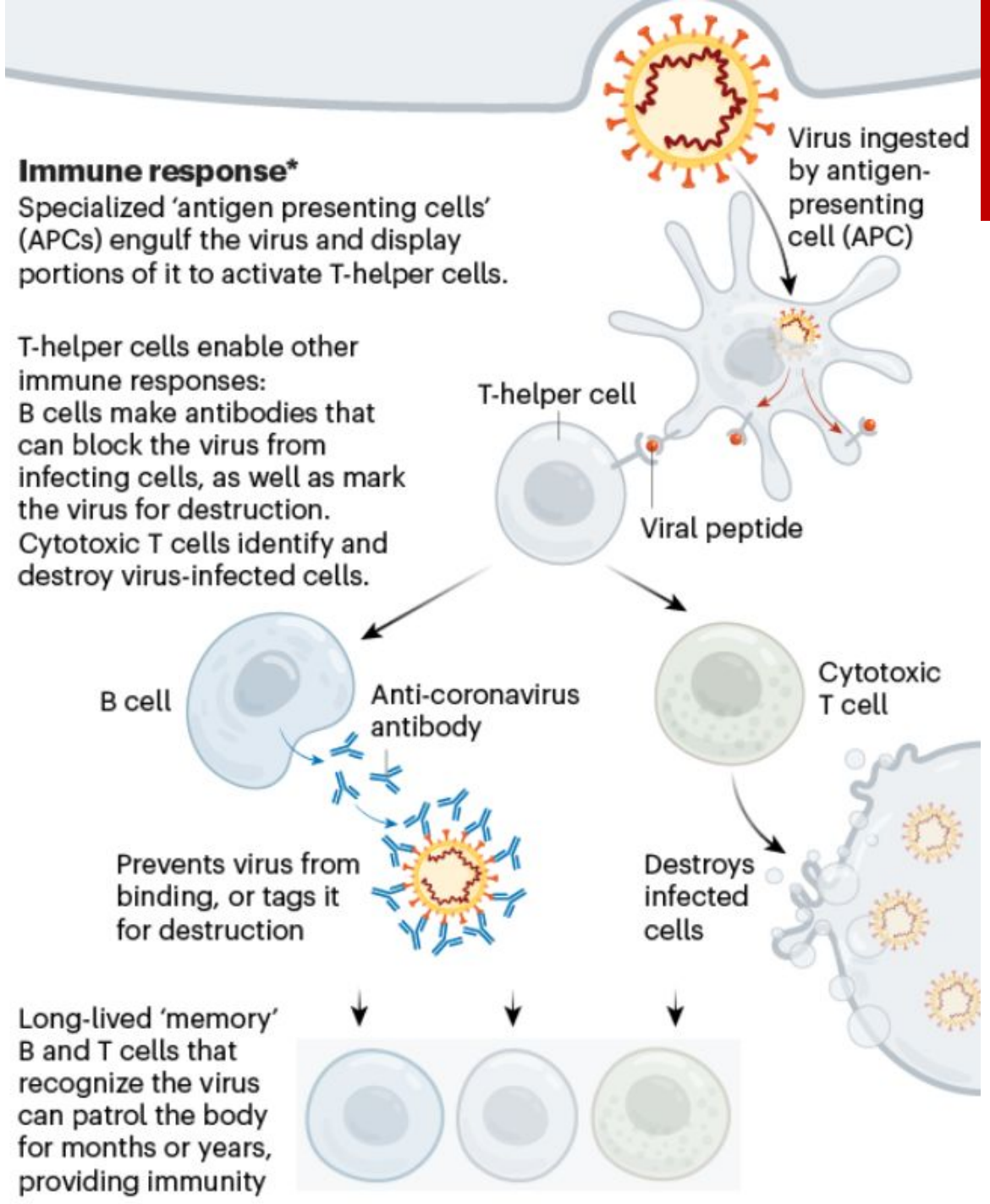


ANTIVIRALS WILL TARGET VIRAL REPLICATION AND ASSEMBLY TO BLOCK VIRAL SPREAD THROUGHOUT THE BODY AND TO OTHER PEOPLE.

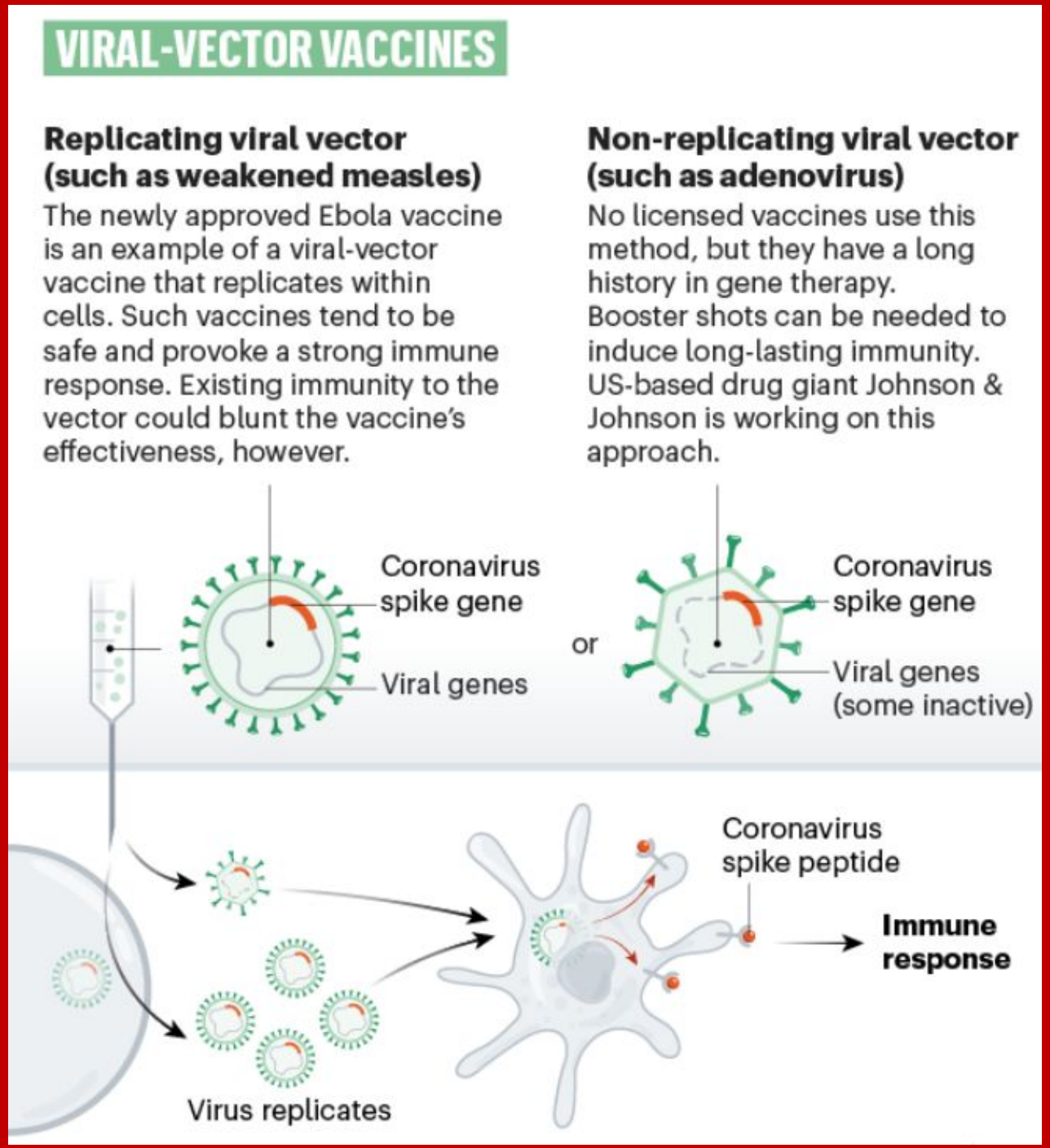
6. As the virus particles exit the cell, furin might act on the spike protein to prime it. The new particles can attack other cells or leave the body and infect other people.

NATURE MAY 4, 2020

IMMUNE RESPONSE



During COVID 19 infection, body reacts and generates cells that produce antibodies and cells that kill virus infected cells.



COVID VACCINES: REPLICATING NON-REPLICATING VIRAL VECTORS

$1.2 billion to AstraZeneca and Oxford

$456 million to Johnson & Johnson.

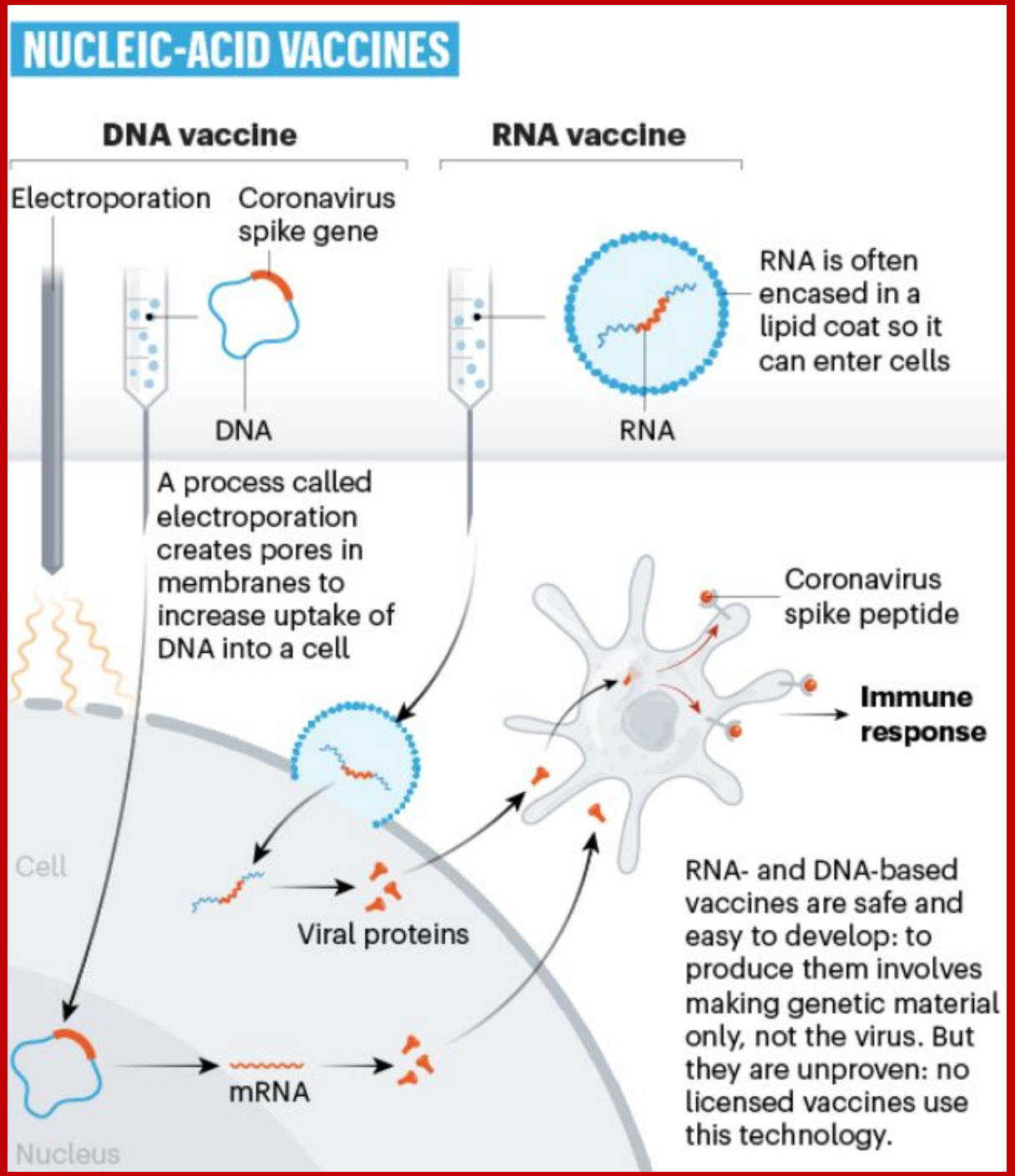
Adenovirus vector

Phase 3 trials August-September 2020

$38 million to Merck

Vesicular stomatitis vector

Human trials have not started



COVID VACCINES DNA OR RNA

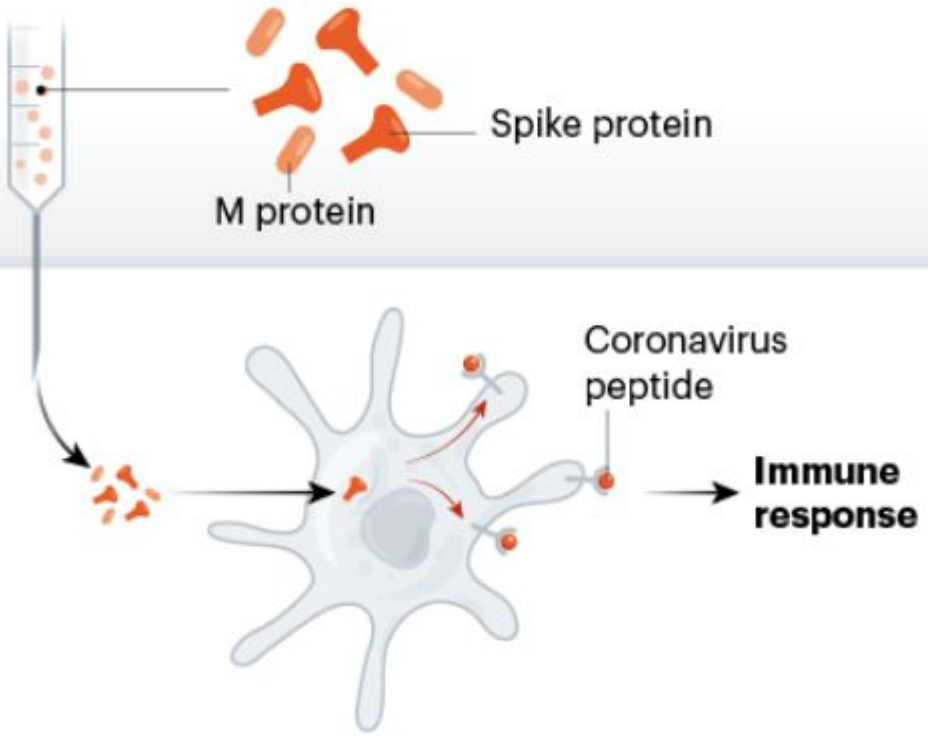
$430 million to Moderna Messenger RNA, for making part of spike protein

Phase 2 Trials July 2020

PROTEIN-BASED VACCINES

Protein subunits

Twenty-eight teams are working on vaccines with viral protein subunits — most are focusing on the virus's spike protein or a key part of it called the receptor binding domain. Similar vaccines against the SARS virus protected monkeys against infection but haven't been tested in people. To work, these vaccines might require adjuvants — immune-stimulating molecules delivered alongside the vaccine — as well as multiple doses.



VACCINES

PROTEIN SPIKE OR RECEPTOR BINDING DOMAIN

$60 million to Novavax

$30 million to Sanofi

Spike protein on nanoparticles with adjuvant

Novavax Phase 3 trials

REMDESIVIR: MECHANISM OF ACTION

- Remdesivir, is being used in the US's first clinical trial of an experimental treatment for COVID-19, the illness caused by the SARS-CoV-2 virus.
- Coronaviruses replicate by copying their genetic material using an enzyme, RNA-dependent RNA polymerase.
- Remdesivir can block replication of a variety of coronaviruses
- As an adenosine nucleoside triphosphate (adenine) analog, one of the four constituent bases of nucleic acids, the active metabolite of remdesivir interferes with the action of viral RNA-dependent RNA polymerase and evades proofreading by viral exoribonuclease (ExoN), causing a decrease in viral RNA production
- RNA Polymerase can incorporate remdesivir, which resembles an RNA building block, into new RNA strands. Shortly after adding remdesivir, the enzyme stops being able to add more RNA subunits. This halts genome replication.

THERAPY WITH CONVALESCENT PLASMA

Started with 1918 pandemic

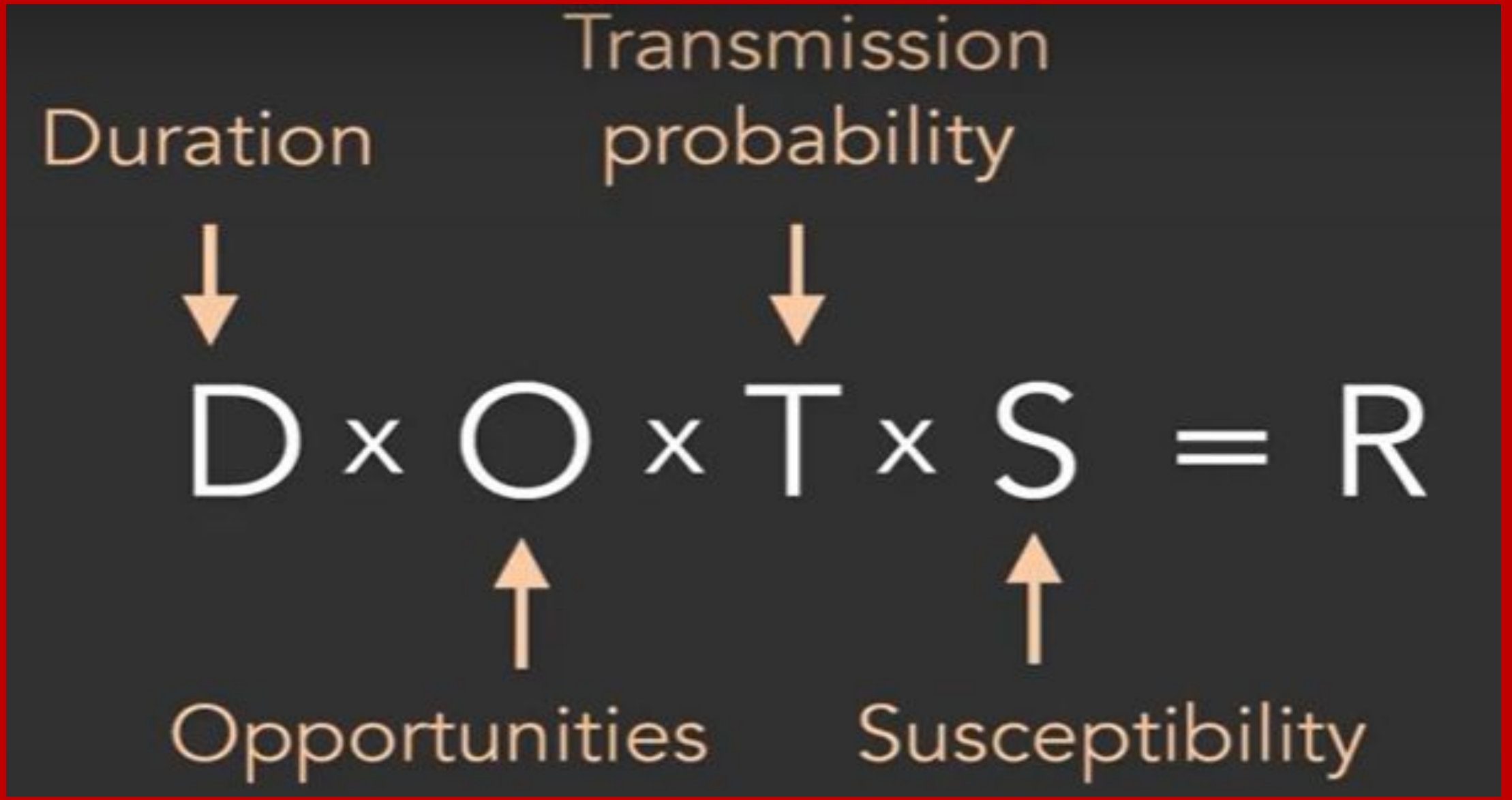
Plasma from person can be used for 2-3 patients

Monoclonal antibodies can be lab produced in large quantities

MODELING

Through discussion of modeling results, decision makers can form a collective judgement on scenarios to plan for, based on the multiple variables considered, and thus reach practical decisions

DETERMINANTS OF EPIDEMIC SPREAD



DETERMINANTS OF EPIDEMIC SPREAD

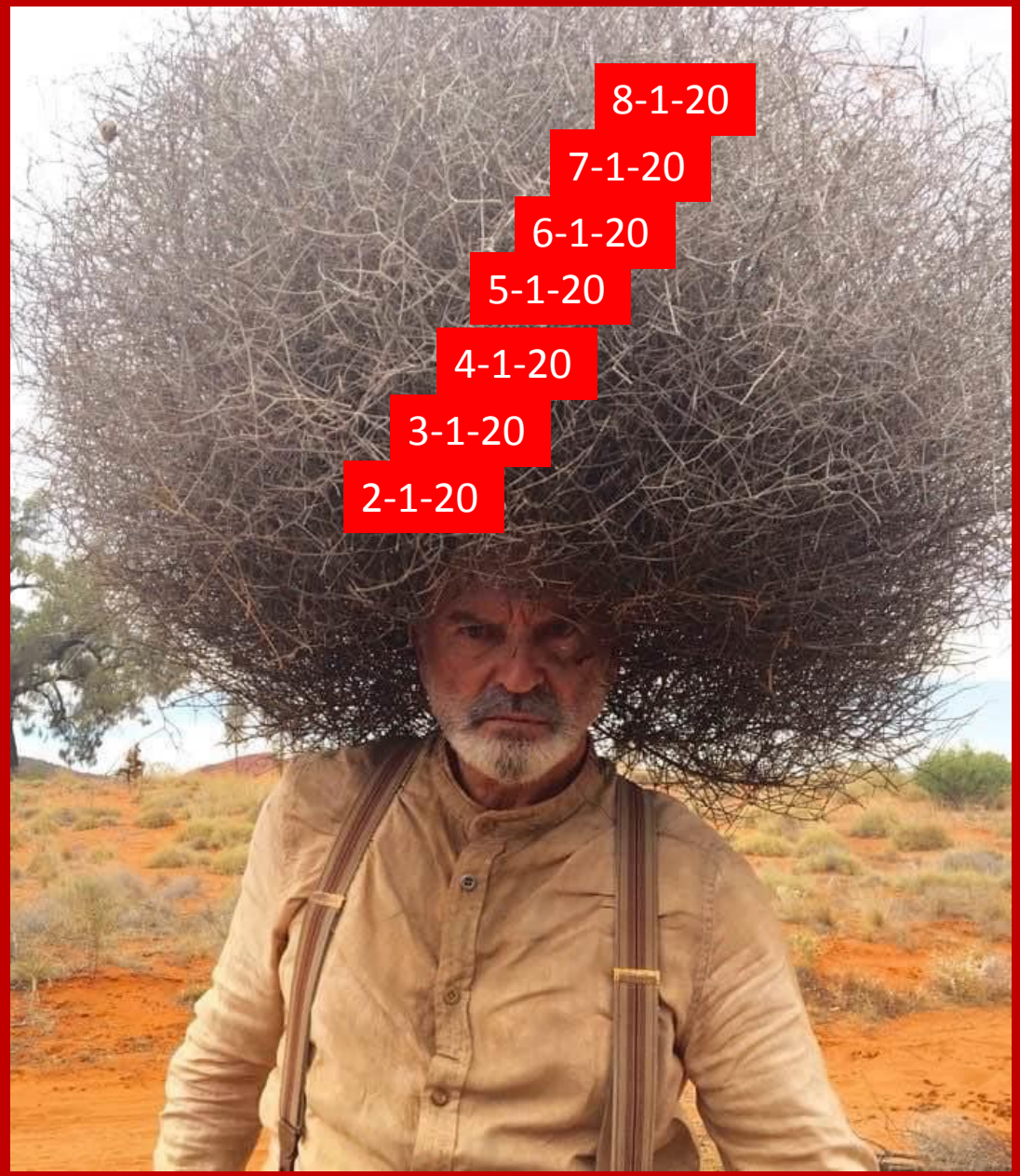
- R = Reproductive number, or how many people a given patient is likely to infect. If R is above one, each case, on average, is giving it to at least one other person. The epidemic will increase. If it is less than one, then a group of infected people are generating fewer new infections. From a policy-planning perspective, it offers a very clear objective i.e., reduce R to less than 1.
- D = Duration of how long someone is infectious. If someone is infectious twice as long, then that's twice as long they can spread the infection. COVID 19 is 14 days.
- O = Opportunity is the number of contacts the infected person during the duration of the infection. If people are isolated (no contacts), then community spread does not occur.
- T = T transmission probability, i.e., chance an infection is spread to a contact
- S = Susceptibility chance a contact will develop the infection and become infectious themselves

MEDICATION

SOCIAL DISTANCING

ELIMINATING PHYSICAL CONTACT BY DISTANCING, MASKS, GLOVES

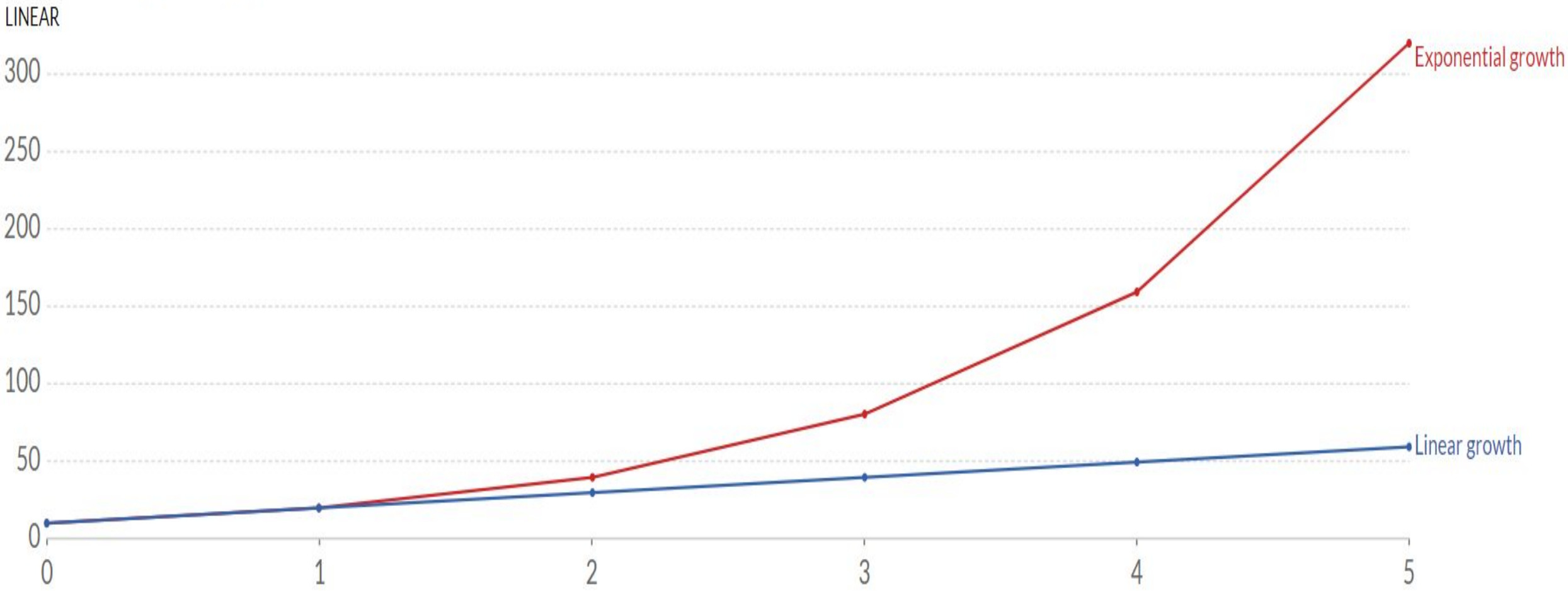
VACCINES



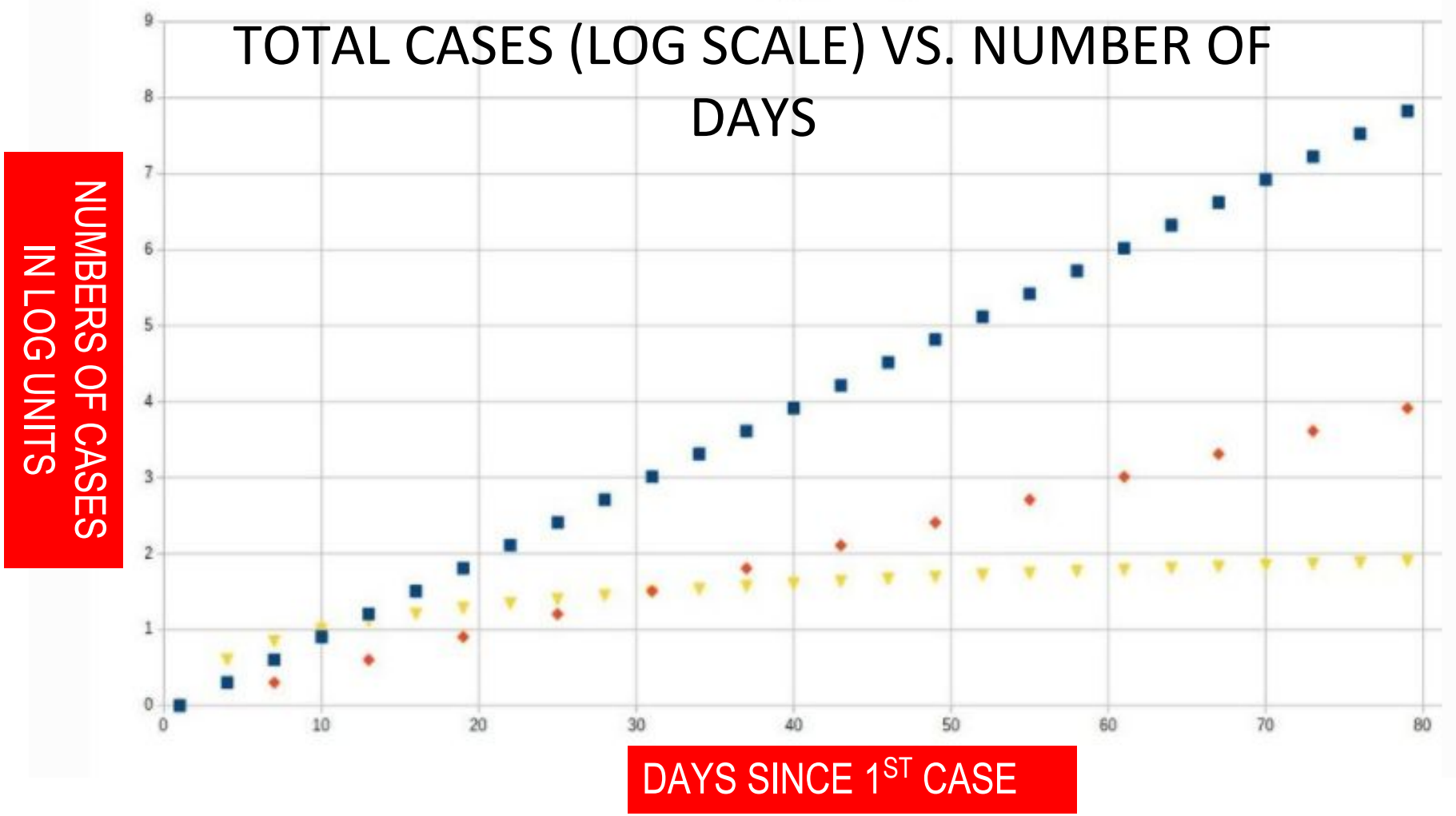
MODEL-BASED PROJECTION OF FRANK'S HAIR GROWTH DURING LOCKDOWN

BY CYNTHIA FRANKLIN
UNIVERITY OF CAHABA HEIGHTS

COMPARISON OF LINEAR VS. EXPONENTIAL GROWTH

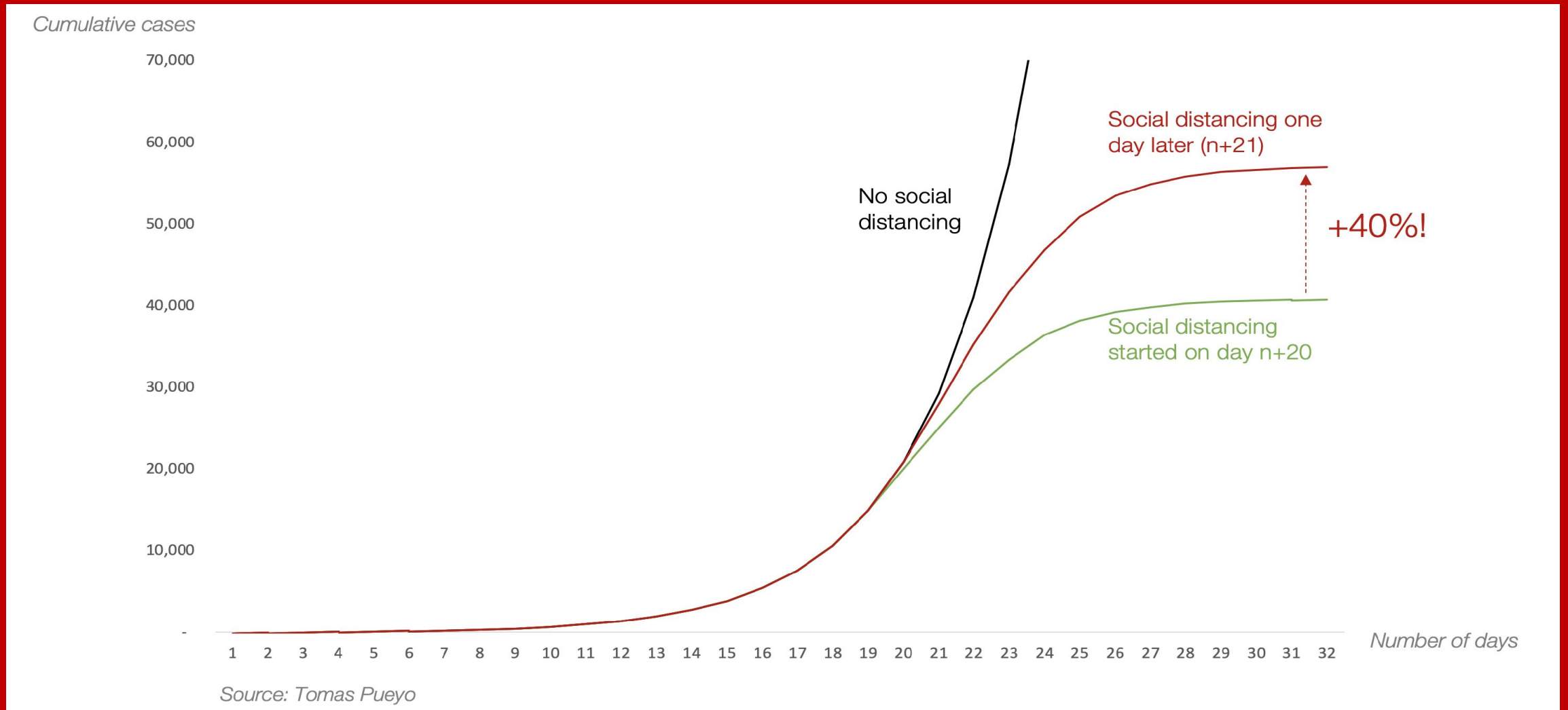


DRAMATIC EFFECT OF EXPONENTIAL GROWTH



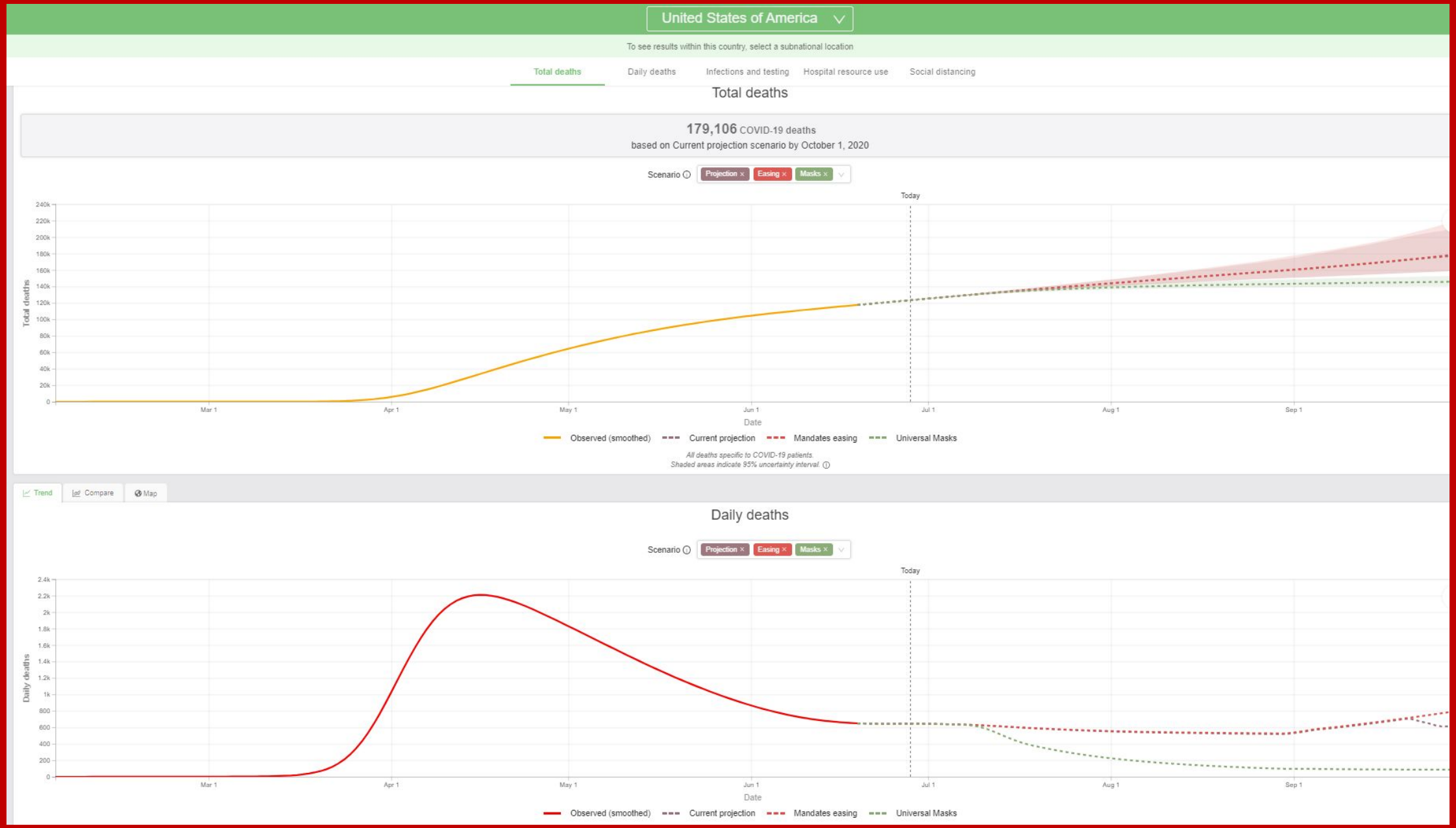
These lines show the epidemic exponential growth with a 3 day doubling period (blue), exponential growth with a 6.0 day doubling period (red), or linear growth (yellow) in the early phases. Note the y-axis is on a logarithmic scale; "3" corresponds to 1,000 cases; "6" corresponds to 1,000,000 cases. COVID 19 deaths doubling time in US is 3 days .

COVID 19 MODEL OF TOTAL CASES WITH SOCIAL DISTANCING MEASURES STARTED 1 DAY APART

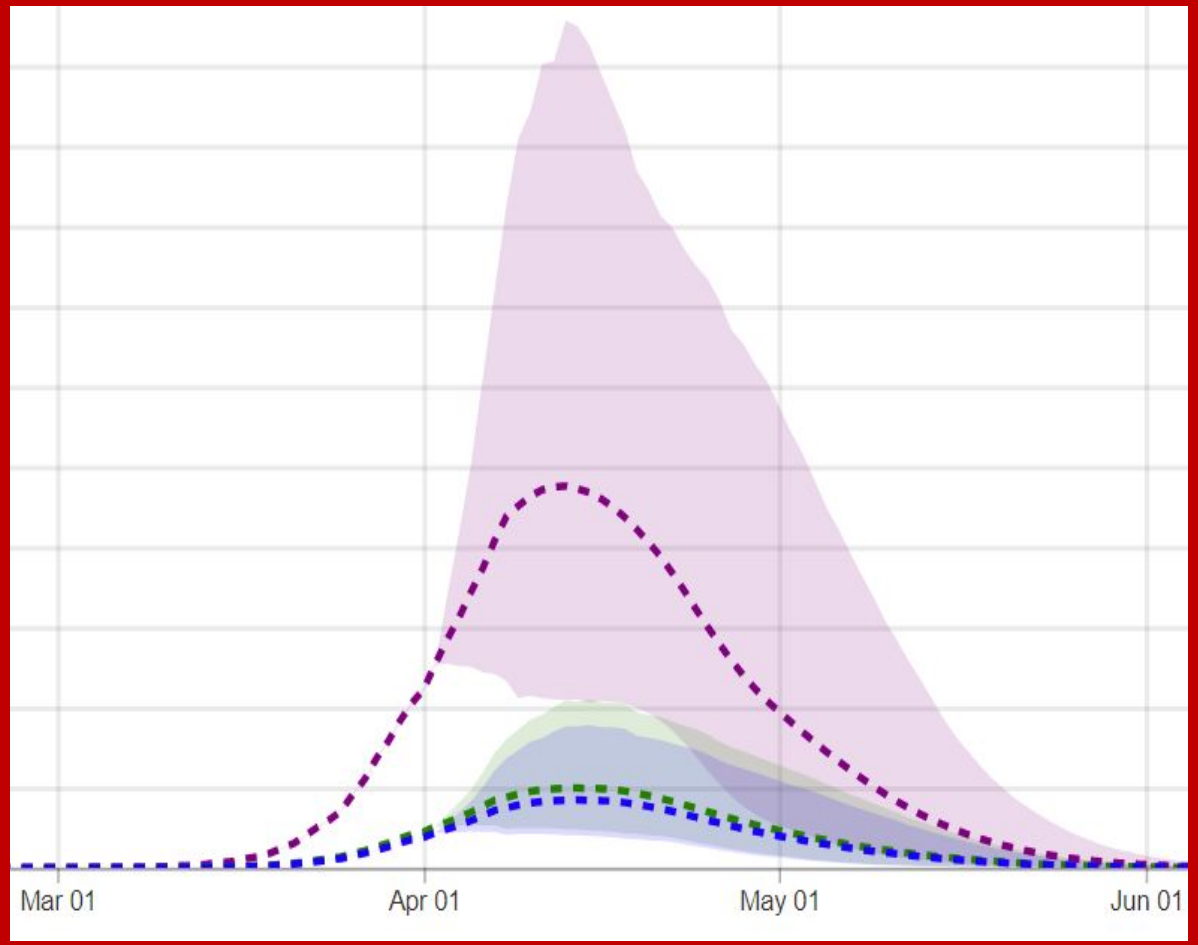


Source: Tomas Pueyo

IHME PROJECTION OF TOTAL DEATHS AND DAILY DEATHS



LIMITS AND UTILITY OF EPIDEMIC MODELS



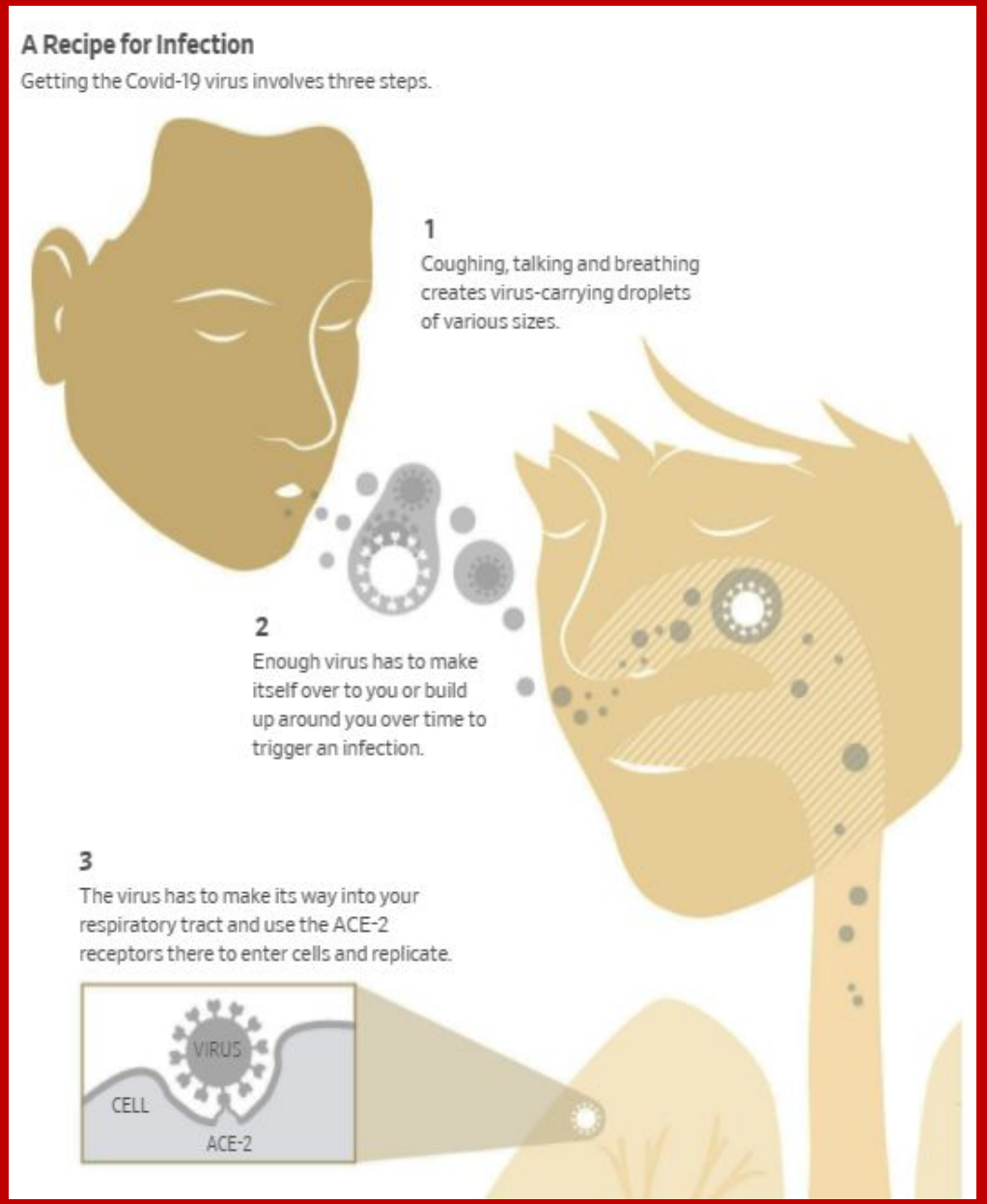
Epidemic models are:

- Limited by the assumptions used to set up the model and the quality and quantity of the available data.
- Projections with a range of uncertainty
- Tools to guide public policy, not promises

The eminent British statistician George Box summarized the point with his famous aphorism: “All models are wrong, but some are useful.”

PREVENTION: HANDWASHING, MASKS, AND DISTANCING

COVID 19 THREAT: REAL AND MANAGEABLE



SUCCESSFUL INFECTION = EXPOSURE TO VIRUS X TIME

- **PHYSICAL DISTANCE: >6 FEET**
- **LIMITED LENGTH OF EXPOSURE: 15-30 MINUTES OR LESS**
- **AIR EXCHANGES; OUTDOORS BETTER THAN INDOORS**
- **MASKS**
- **HANDWASHING**
- **AVOID VIRAL EXPLOSIONS: COUGHS, SNEEZES, SINGING, SHOUTING**
- **TOUCHING ANOTHER PERSON WITHOUT GLOVES OR HANDWASHING**
- **IDENTIFICATION/TESTING CONTACT TRACING, ISOLATION OF CASES (QUARANTINE)**

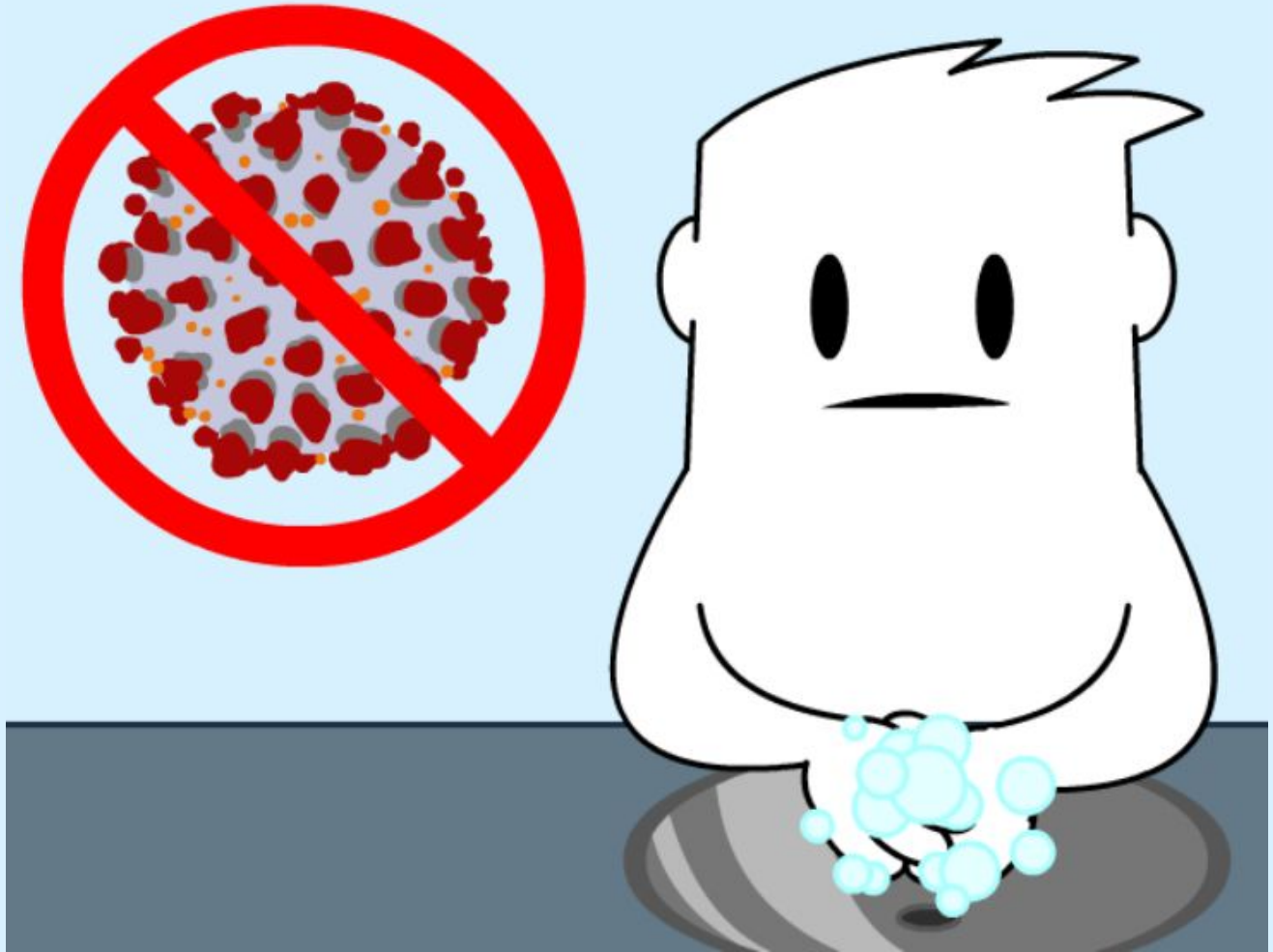
"We should not be thinking of a lockdown, but of ways to increase physical distance. This can include allowing outside activities, allowing walking or cycling to an office with people all physically distant, curbside pickup from stores, and other innovative methods that can facilitate resumption of economic activity

COVID 19 PERSONAL PROTECTION: SIMPLE PRACTICES WORK

ACTION	PROTECTION (%)
HAND WASHING 10X/DAY	**55**
GLOVES	**57**
REGULAR FACEMASKS	**68**
GOWNS	**77**
HANDWASHING, GLOVES, FACEMASKS, GOWNS	**91**

BMJ. 2008 Jan 12; 336(7635): 77–80.

Wash your hands for 20+ seconds



Steps to prevent COVID 19

Avoid touching your eyes, nose, and mouth.

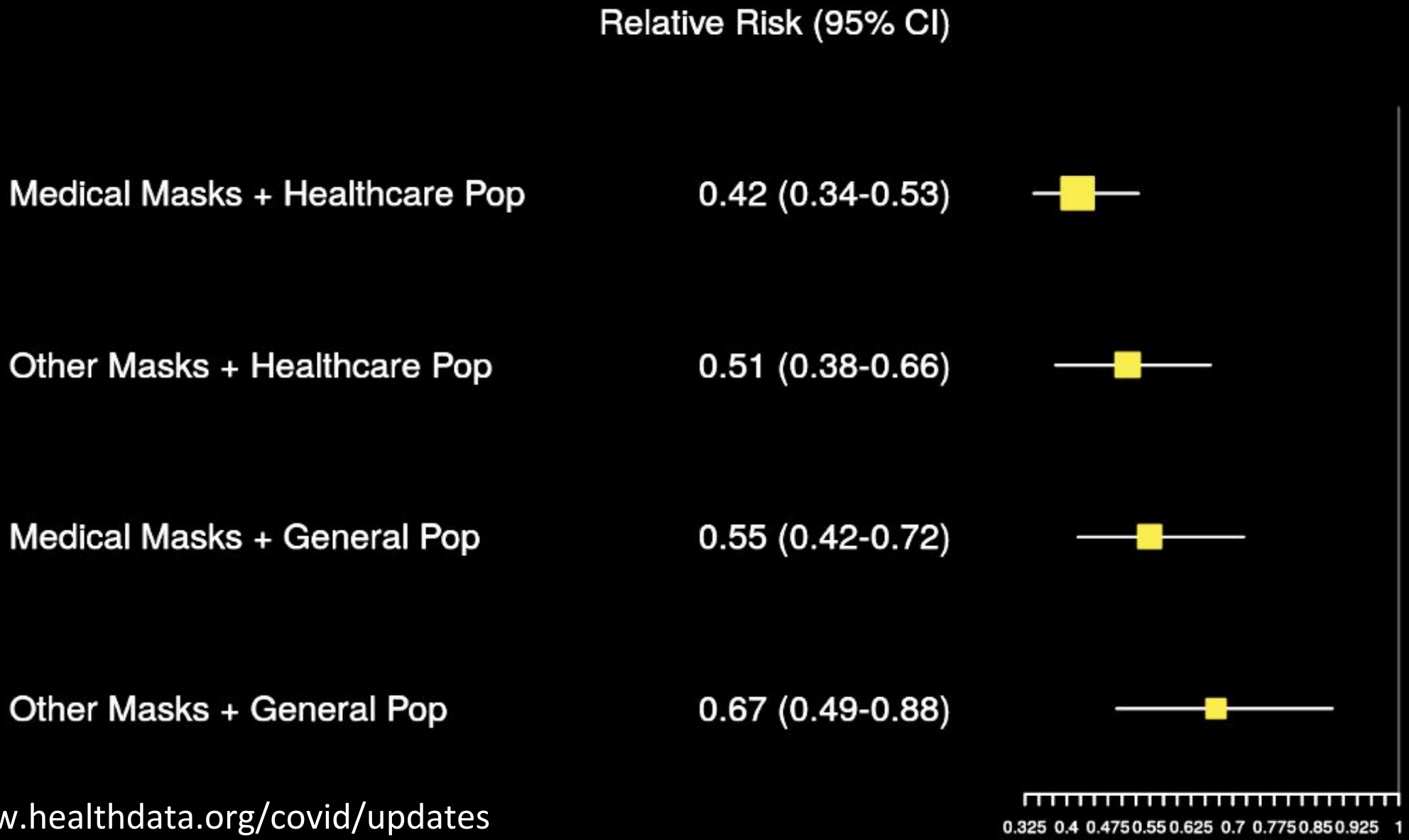
STEPS TO PREVENT COVID 19

Avoid close contact with people who are sick,
and keep at least 6 feet between yourself
and anyone who is coughing or sneezing.

MASK WEARING IS EFFECTIVE

CORONAVIRUS

DECREASE IN RISK OF COVID 19 WITH MASK WEARING



http://www.healthdata.org/covid/updates

Wear a mask?
Yes, always wear a mask.

Wear a mask whenever you are in public to help curb the spread of COVID-19, and encourage others to do the same. Widespread mask use may temper or even help prevent a second wave of the pandemic.

- We considered more than 20 studies and ran a meta-analysis. The results show that masks work, but survey data reveal that mask use varies.
- Globally, mask use has increased since April 26, 2020, but some countries still lag.
- Mask use in the US has increased since April 26, 2020, but rates vary by state and region.

Whether cloth or medical-grade, masks can **reduce the risk** of respiratory illnesses like COVID-19 by

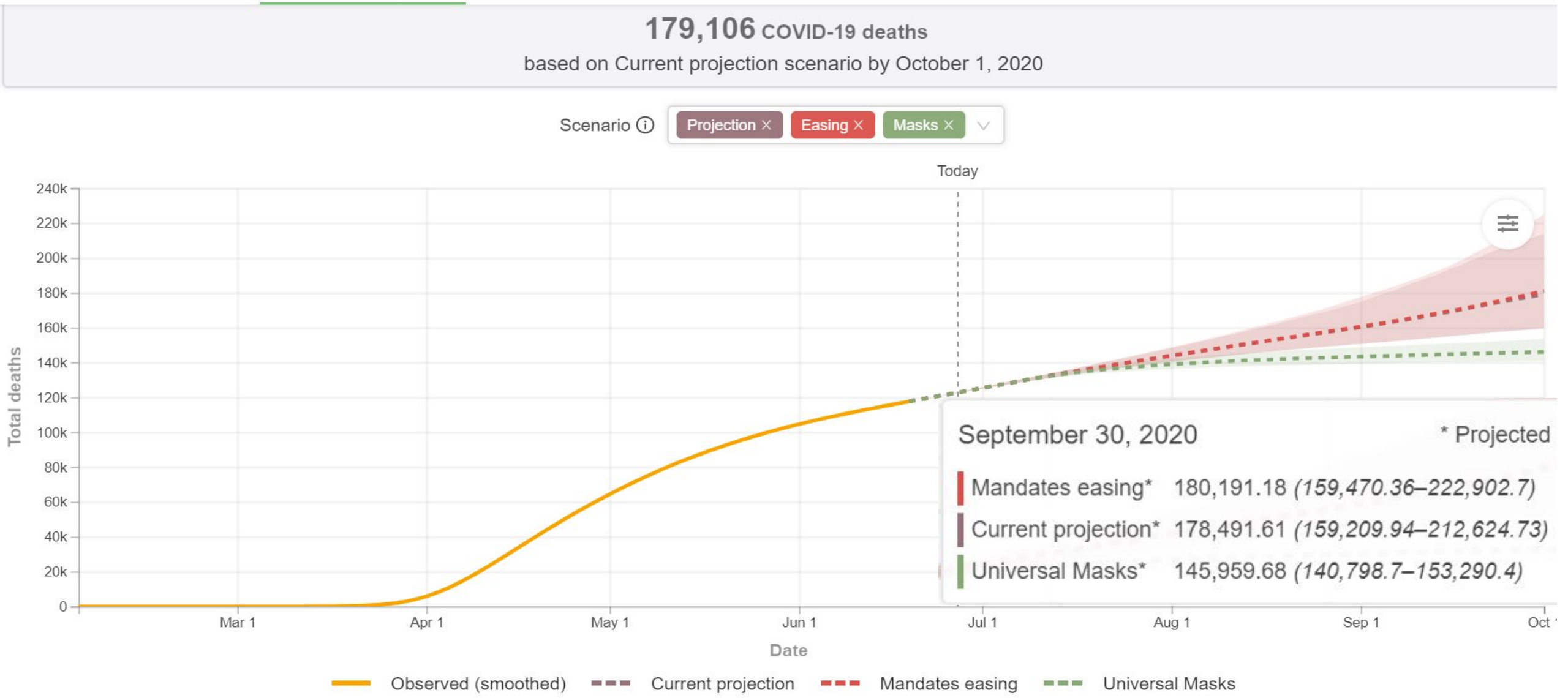
1/3 or more

IHME SCENARIOS FOR THEIR PROJECTIONS

- **The first alternative scenario, referred to as "Mandates easing"** in our visualization tool, shows what would happen in each location if the current pattern of easing social distancing mandates continues and new mandates are not imposed. In other words, this can be thought of as a worst-case scenario, where regardless of how high the daily death rate gets, social mandates will not be re-introduced before October 1. In locations where the number of cases is rising, this leads to very high predictions by October 1.
- **The second scenario, referred to as "Universal masks"** in our visualization tool, shows what would happen if 95% of the population in each country always wore a mask when they were in public. This value was chosen to represent the highest observed rate of mask use in the world during the COVID-19 pandemic. In this scenario, if the daily death rate in a location exceeds 8 deaths per million, we are assuming that social mandates will be reintroduced for a six-week period, just like in our "Current prediction" model.

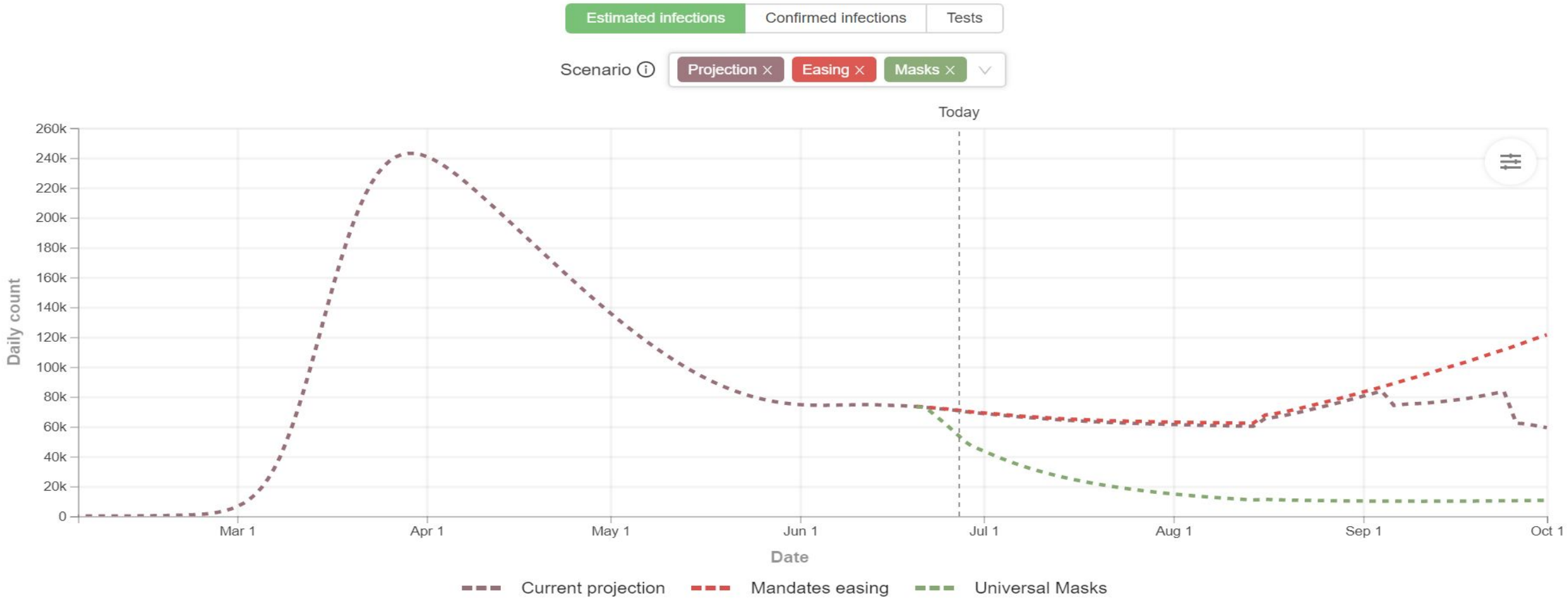
http://www.healthdata.org/covid/updates

PROJECTED NUMBER OF US DEATHS +/- MASKS



https://covid19.healthdata.org/united-states-of-america

PROJECTED NUMBER OF US INFECTIONS: +/-EASING AND MASKS



https://covid19.healthdata.org/united-states-of-america

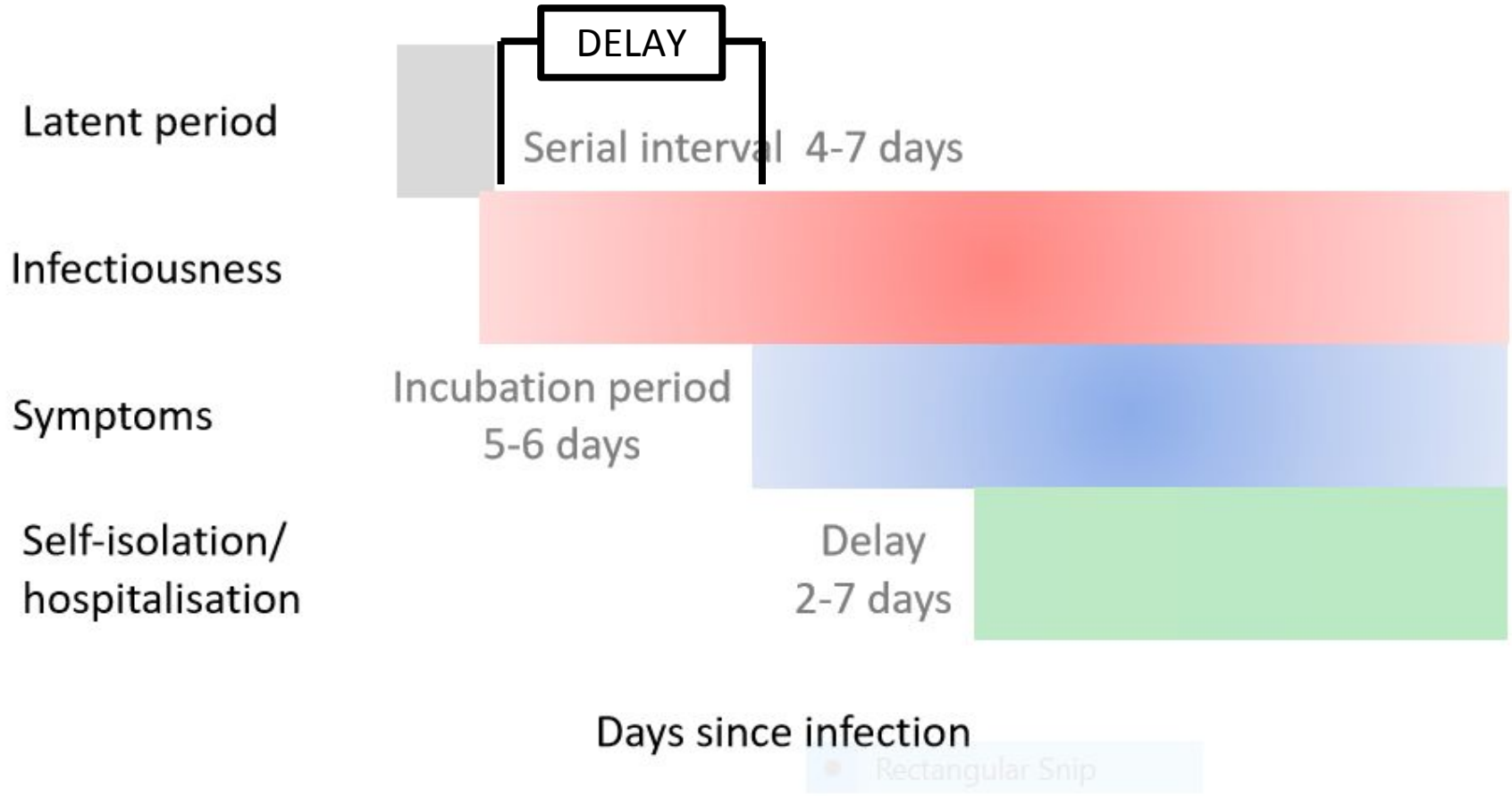
EMPTY SUPERMARKET TOILET PAPER RACK. ELDERLY DUDE AWAITING RESTOCK.

NONPHARMACEUTICAL INTERVENTION

MITIGATION- IMPLEMENTED AT THE COMMUNITY LEVEL OF INTERVENTIONS DESIGNED TO LOWER SCALE AND SPEED OF SPREAD OF PANDEMIC VIRUS TO PROVIDE ADEQUATE CARE TO THE SICKEST PATIENTS

FACTORS AFFECTING EFFICACY OF MITIGATION

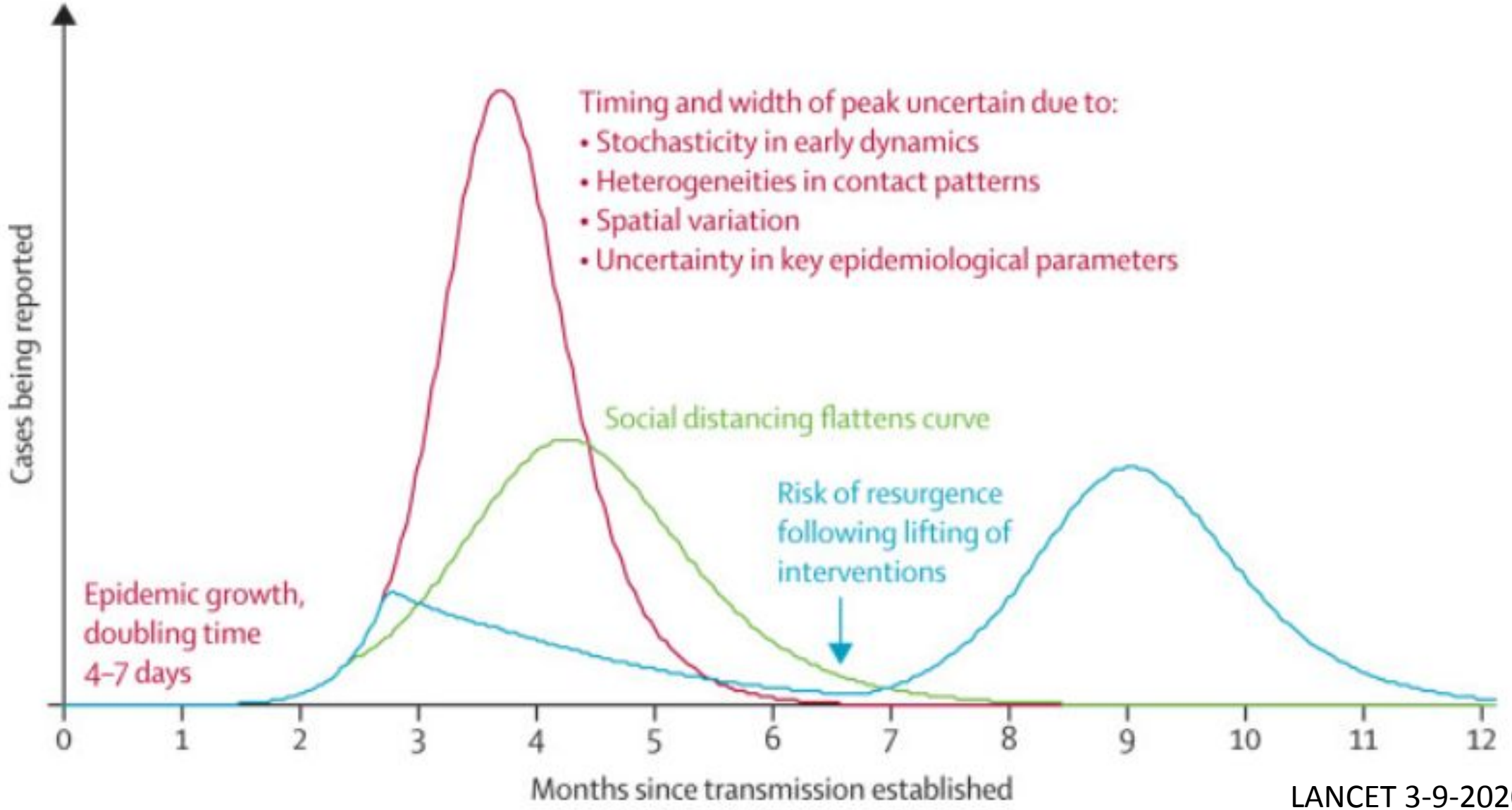
Determination of the serial interval, the time between the start of symptoms in the primary patient (infector) and onset of symptoms in the patient receiving that infection from the infector (the infectee)



Features of COVID-19 infection that affect how mitigation measures will influence the shape of the epidemic curve. Key is that the time to infectiousness (latency) is possibly shorter than the time to symptoms (incubation) and therefore the delay to care seeking or isolation is a crucial period.

LANCET 3-9-2020

IMPACT OF SOCIAL DISTANCING (MITIGATION)



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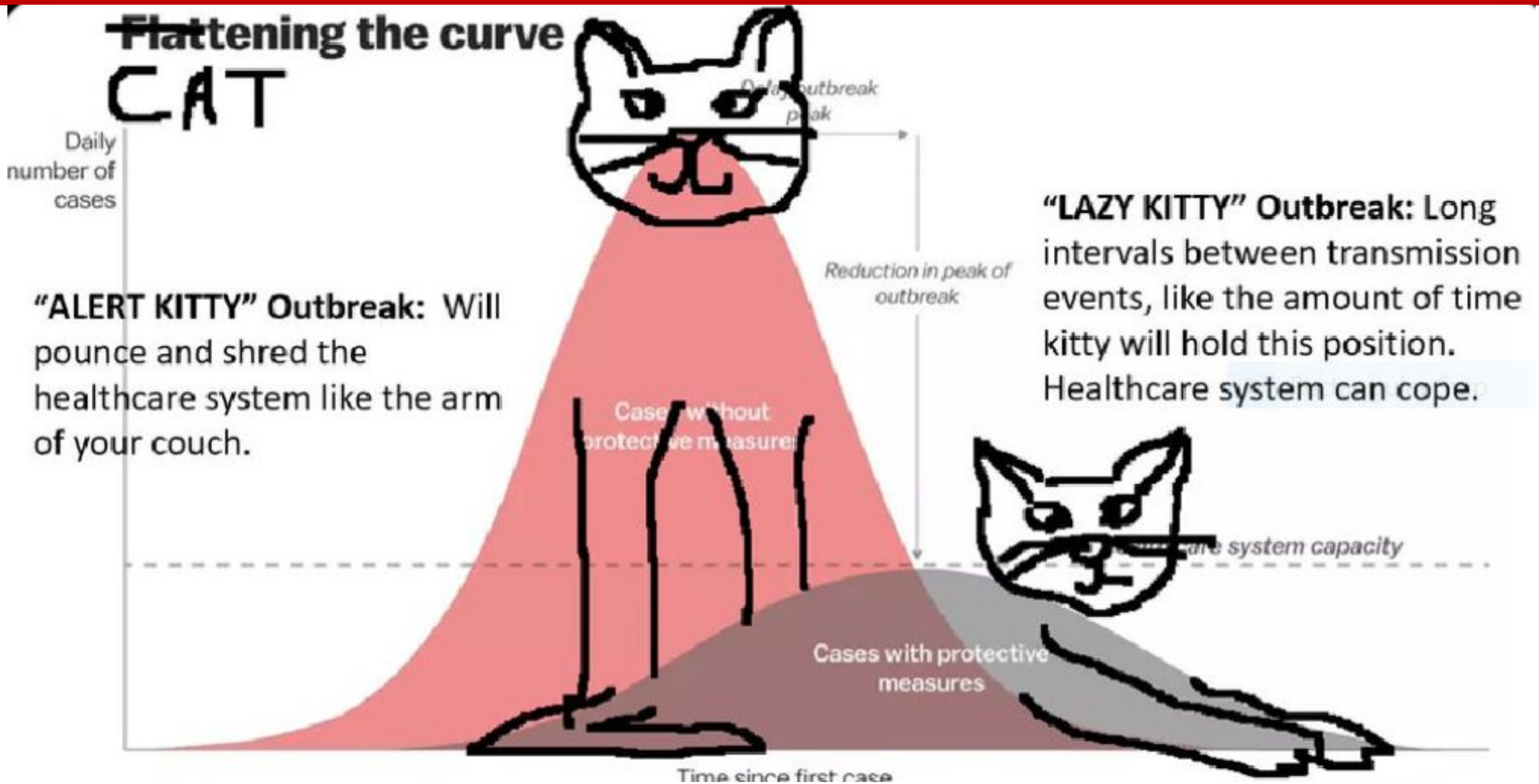
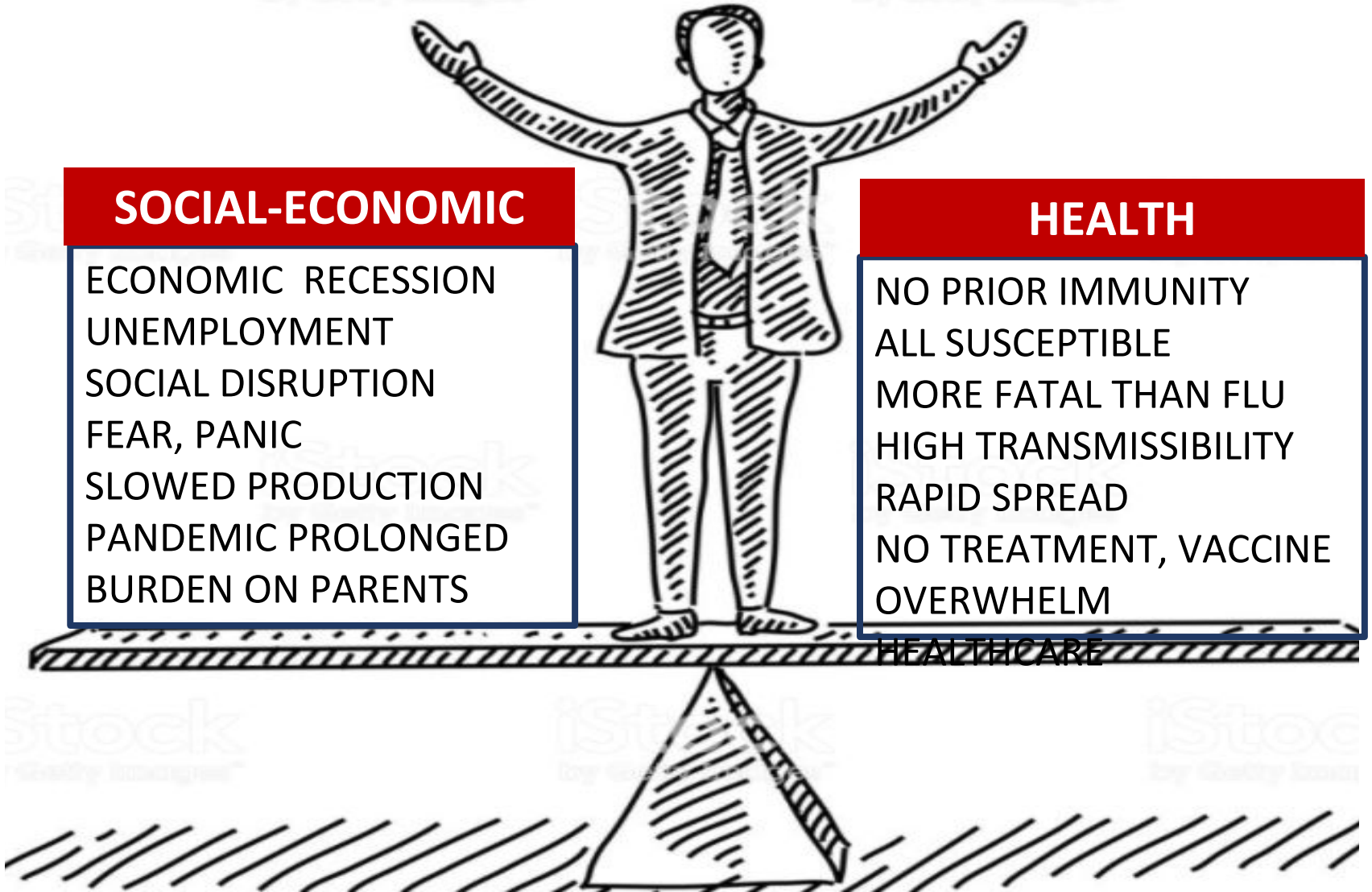
CATch public's attention and communicate clearly



BALANCED EFFECTS OF SOCIAL DISTANCING TO CONTAIN CONTAGION:

Closing schools, workplaces and limited travel



SOCIAL-ECONOMIC

ECONOMIC RECESSION
UNEMPLOYMENT
SOCIAL DISRUPTION
FEAR, PANIC
SLOWED PRODUCTION
PANDEMIC PROLONGED
BURDEN ON PARENTS

HEALTH

NO PRIOR IMMUNITY
ALL SUSCEPTIBLE
MORE FATAL THAN FLU
HIGH TRANSMISSIBILITY
RAPID SPREAD
NO TREATMENT, VACCINE
OVERWHELM
HEALTHCARE

COVID 19 CRISIS:
CHALLENGES OF COMMUNICATION

EFFECTIVE COMMUNICATION FOR PUBLIC HEALTH THREAT

- Define affected target population (e.g. those with high risk behaviors) and their perception of risk and benefit to adopt public health recommendation
- Define partners who might help reach affected populations
- Select a messenger who will be perceived as honest, credible, competent, expert, dedicated, committed, understanding and empathetic.
- Content of the public health message
  - Identify and explain the public health threat. What's known and a call for action now, including Who? What? When? Where? Why? How?
  - What's not known, and how answers will be obtained, when additional information will be provided and where to find more information
  - Explain plainly and clearly the public health actions being taken and why
  - Focus on Single Overriding Health Communication Objective (SOHCO)

www.cdc.gov/eis/field-epi-manual/chapters/Communicating-Investigation.html#tbl12-1

How to Talk to the Public in a Health Crisis

- **Be truthful and accurate.** Distorting reality or misleading the public can contribute to more sickness and deaths.
- **Be informed and current.** Have a plan that is proscriptive, detailed, practical, evidence-based, and science-driven.
- **Know your audience.** People are likely to comply if they understand the message and trust the messenger. A compassionate, calm tone helps.
- **Beware of minefields.** "I don't know but I'll do what I can to find out." is a fine answer.
- **Be willing to quit or be fired**. Just as a physician's top priority must be the patient, a public health official's top priority must be the people.

The right words delivered responsibly, carefully, and professionally is one of the most important public health tools.

https://www.barrons.com/articles/the-cdc-needs-public-trust-to-find-a-path-through-the-pandemic-51591914620?tesla=y

ADMIT UNCERTAINTY ABOUT COVID 19

Fools are certain of themselves while wiser people are full of doubts.

CRAZY CRAP: 5G CORONAVIRUS CONSPIRACY THEORY

- January 20: French web site "The rabid sheep“ claims the millimeter wave spectrum, used by 5G technology caused COVID 19 based on Wuhan installing 5G towers before the outbreak.
- Three months later, conspiracy theorists with similar claims set cellphone towers on fire in Europe.
- Theory of the relationship between the coronavirus and 5G have ballooned into wild and completely unfounded speculation COVID 19 was triggered by 5G radiation, a coverup for installation of 5G towers and a broad effort to depopulate the earth.
- Coincidence and correlation are not evidence of causation except in the fertilized cerebrum of conspiracy theorists.

Recode Vox

FAILURES
FLAWS
FOOLING OURSELVES

EARLY ACTION COULD HAVE PREVENTED LOSS OF LIVES AND LIVELIHOODS

Lessons of Covid 19 Control: Hong Kong, Singapore, and Japan

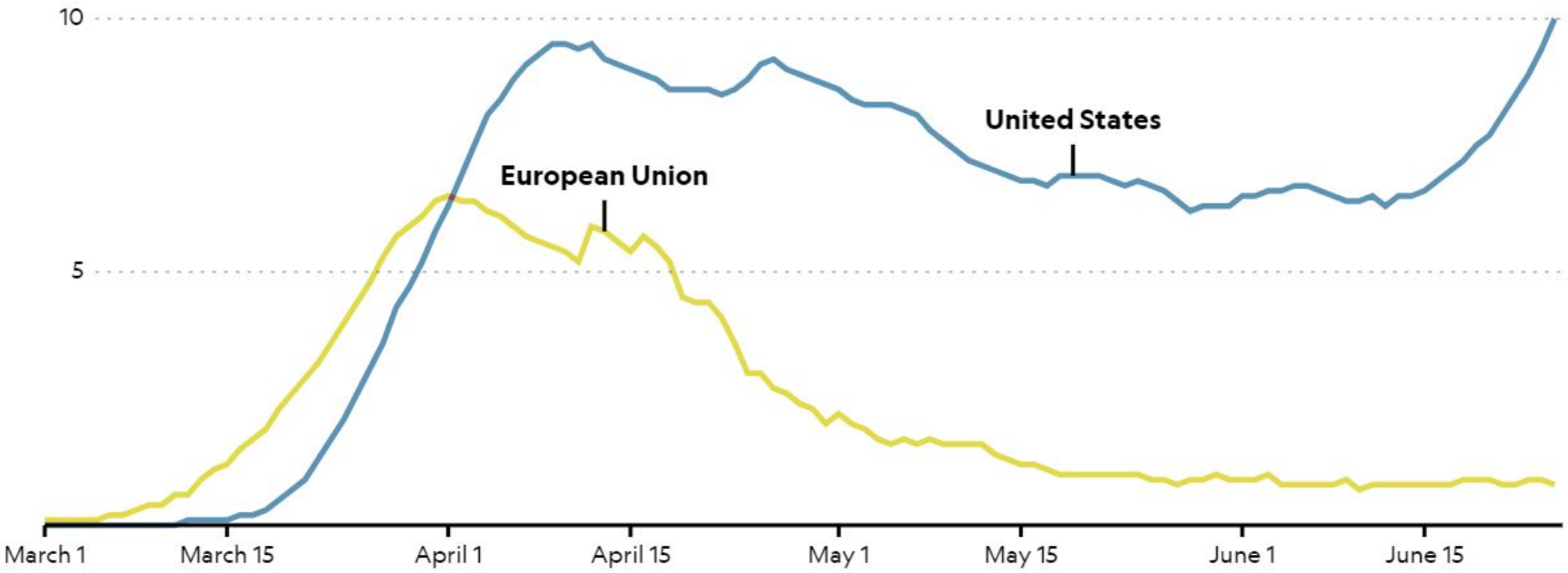
- Initiate early surveillance and containment strategies (testing, isolation, quarantine, contact tracing).
- Control travelers entering country
- Strong intragovernmental coordination based on experience with prior epidemics.
- All direct costs for treating patients borne by the governments.
- Appropriate training and adherence to infection prevention and control measures in hospitals.
- Attend to political environment and differences in communities and their moods and values.
- Comprehensively manage information systems to provide accurate and transparent risk communication especially in emergencies as it determines whether the public trusts authorities more than rumors and misinformation.
- **Lessons learned:** 1) Integration of services in the health system and across other sectors strengthens the ability to absorb and adapt to a shock. 2) Spread of misinformation and fake news is a major challenge. 3)Trust of patients, health-care professionals, and society in government is of paramount importance for meeting health crises.

LANCET March 14, 2020

COVID 19 DEATHS US VS EU

The United States has substantially larger case rates, even though its population (330 million) is similar to the European Union (440 million).

New confirmed cases per 100,000 people, 7-day rolling average

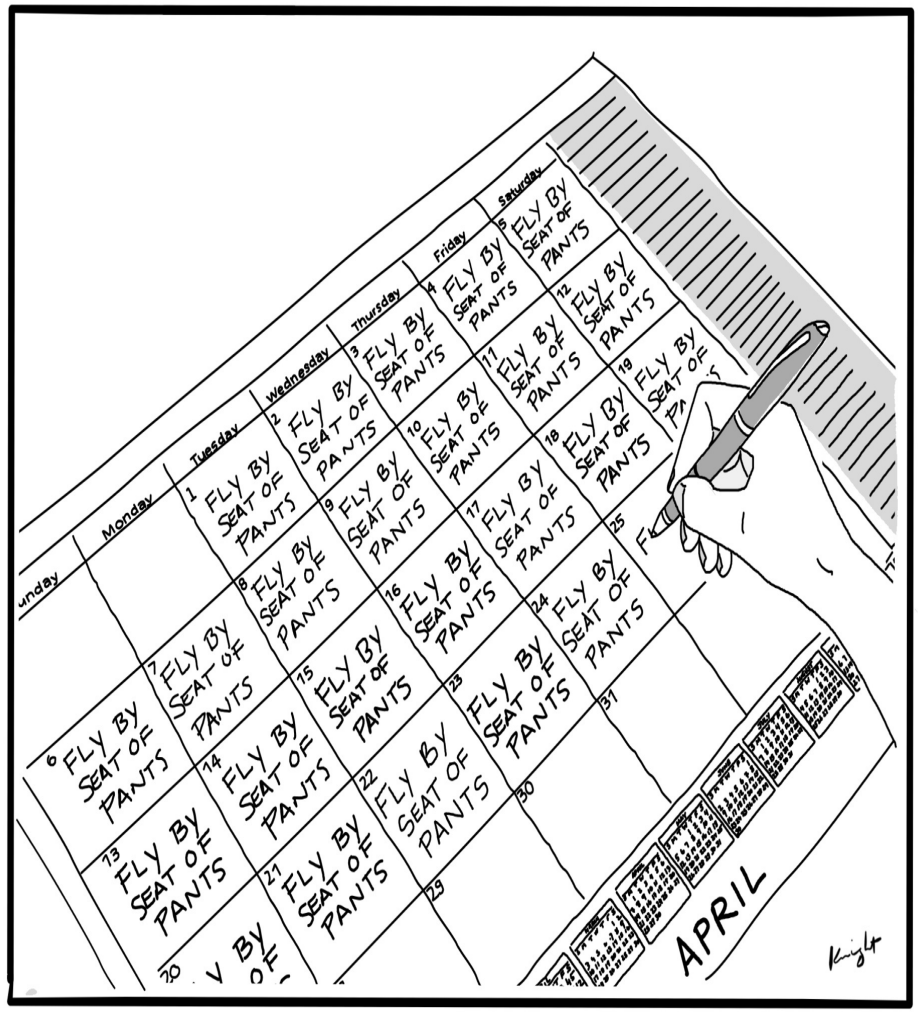


https://www.nationalgeographic.com/science/2020/06/how-to-stop-coronavirus-surges-from-winning-the-war-cvd/?cmpid=org=ngp::mc=crm-email::src=ngp::cmp=editorial::add=SpecialEdition_20200626&rid=AAD7BA7FCD1FC5FE8FA5EF6FF2738B7A

COVID-EMIC FAILURES HURT US HEALTH AND ECONOMY

- Unprepared for pandemic; then response mixed with partisanship
- Confused, uncoordinated leadership at federal, state and city levels
- False and foolish separation of economic and population health
- Communication: not clear, open, honest, accurate and empathic
- Weakened, constrained CDC and local PH agencies = MIA
- Failed CDC test and FDA regulation blocked early testing expansion
- State-level control with little federal guidance caused chaotic late closure and rushed reopening
- Lack of personal protective equipment harmed healthcare workers
- Opening: Ignored CDC guidelines without strong test, trace, isolate

PLAN AHEAD - PREVENT SPREAD - INSTEAD MANY DEAD



- US lacks strong, national public health system. US default public health strategy: neglect, panic, repeat.
- Public health is cost effective and consistently saves the most lives with least amount of money. As epidemics faded, individual rights became much more important than collective responsibility. As medicine grew more sophisticated, health viewed as purely a personal matter.
- Health care spending grew by 52% in the past decade, while budgets and workforce of local health departments shrank by 24%.CDC's budget remained flat. Public health claims just 3 cents of every US health dollar.
- Technology already exists to create a modern, effective and efficient public health infrastructure grounded in and guided by rigorous, apolitical science but needs funding ($5.4B) for adaptation and implementation. With Covid-19, funding increased to

FROM THE WHITE HOUSE RESPONSE GROUP

COVID 19 EPIDEMIC CONTROL:
STEPS TO LIFT SOCIAL DISTANCING AND RESTORE NORMALITY

1) COLLECT EVIDENCE OF EPIDEMIC CONTROL IN LOCAL AREA

2) CONTINUE SURVEILLANCE AS WE GRADUALLY OPEN SITES

3) REOPEN SCHOOLS AND WORKPLACES WITH EXPANDED ONLINE CAPACITY AND DEVELOP ADVISORY GROUP

4. FULLY RESTORE FINANCIAL AND SOCIAL HEALTH AND PREPAREDNESS

ALABAMA IS OPEN BUT UNPREPARED TO SUPPRESS DISEASE SPREAD AND PREVENT A FULL SECOND EPIDEMIC WAVE

- Despite a constant level of testing, new cases continue to increase.
- Deaths have likely decreased slightly in last 2 weeks.
- Testing is 45% of recommended rate
- Contract tracing is 7% of needed capacity
- The foundation for continued opening the economy is to:
  - Demonstrate a decrease over 14 days in cases and death
  - Ramp up test capacity and extent to identify cases quickly and completely
  - Ramp up contract tracing capacity to test contacts quickly and completely

Failure to test and track adequately ensures disease spread.

Are we doing what's needed to control disease? NO!

METRICS TO MANAGE COVID 19 PANDEMIC

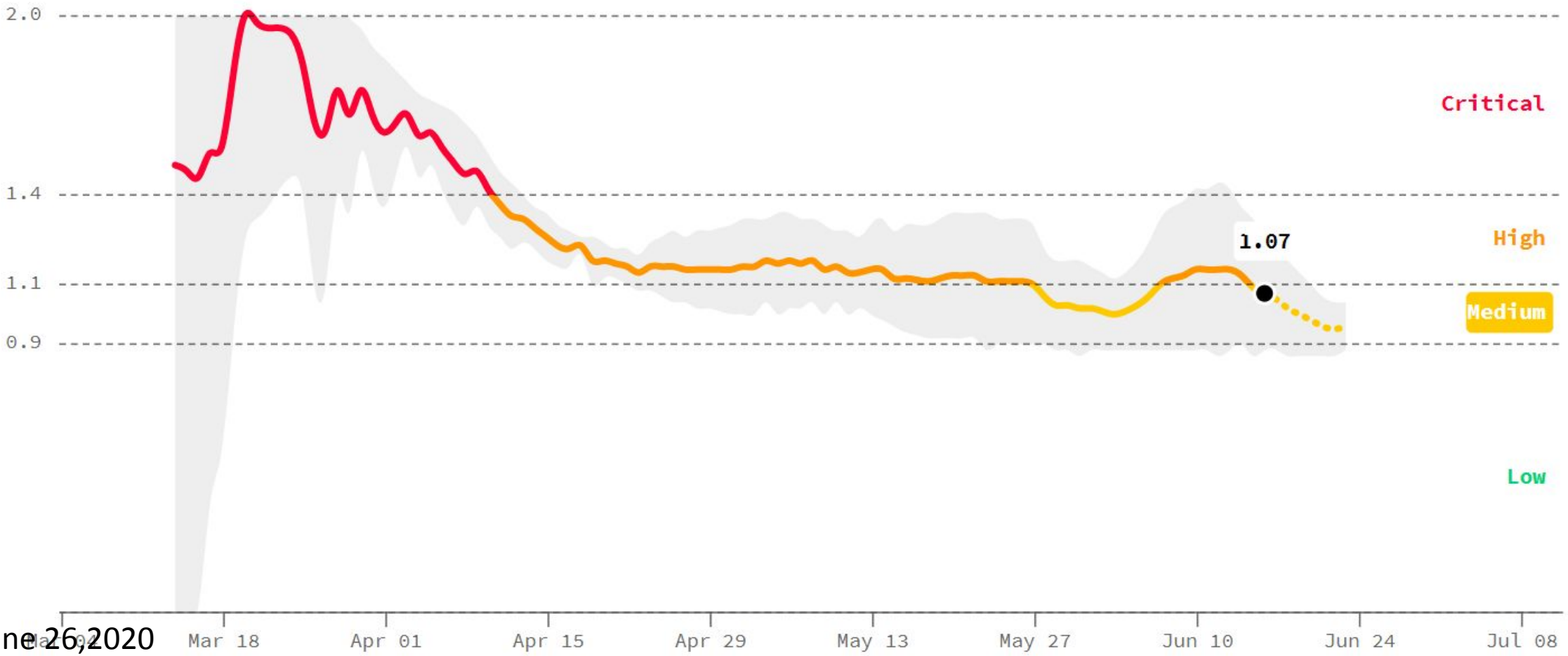
FOUR KEY METRICS TO UNDERSTAND WHEN AND HOW TO REOPEN SAFELY.

- **COVID case growth:** Are the number of cases increasing, stabilizing, or decreasing?
- **Testing capacity:** Are we testing broadly enough to track disease spread?
- **ICU safety margin:** Is there enough ICU hospital capacity to absorb a possible wave of new COVID hospitalizations?
- **Contact tracing:** Are we finding and isolating new cases before COVID spreads?

Data-driven decisions help us better manage our response to COVID. The better we manage our response to COVID, the less our economy will be harmed and the more lives we can help save.

INFECTION RATE (R) AL

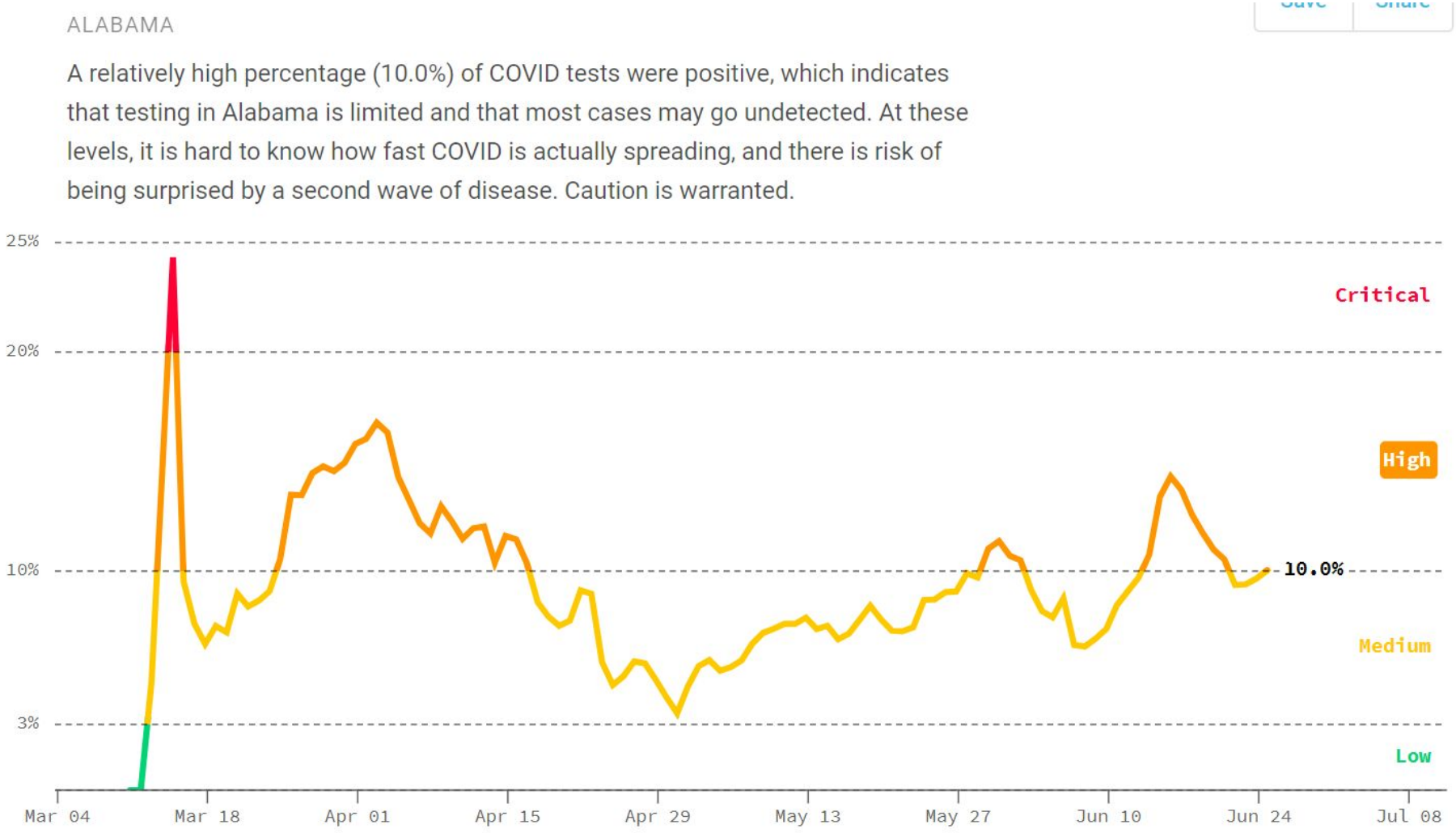
On average, each person in Alabama with COVID is infecting 1.07 other people.
Because this number is around 1.0, it means that COVID continues to spread, but in a slow and controlled fashion.



As of June 26,2020

TESTING CAPACITY AL

As of June 26,2020

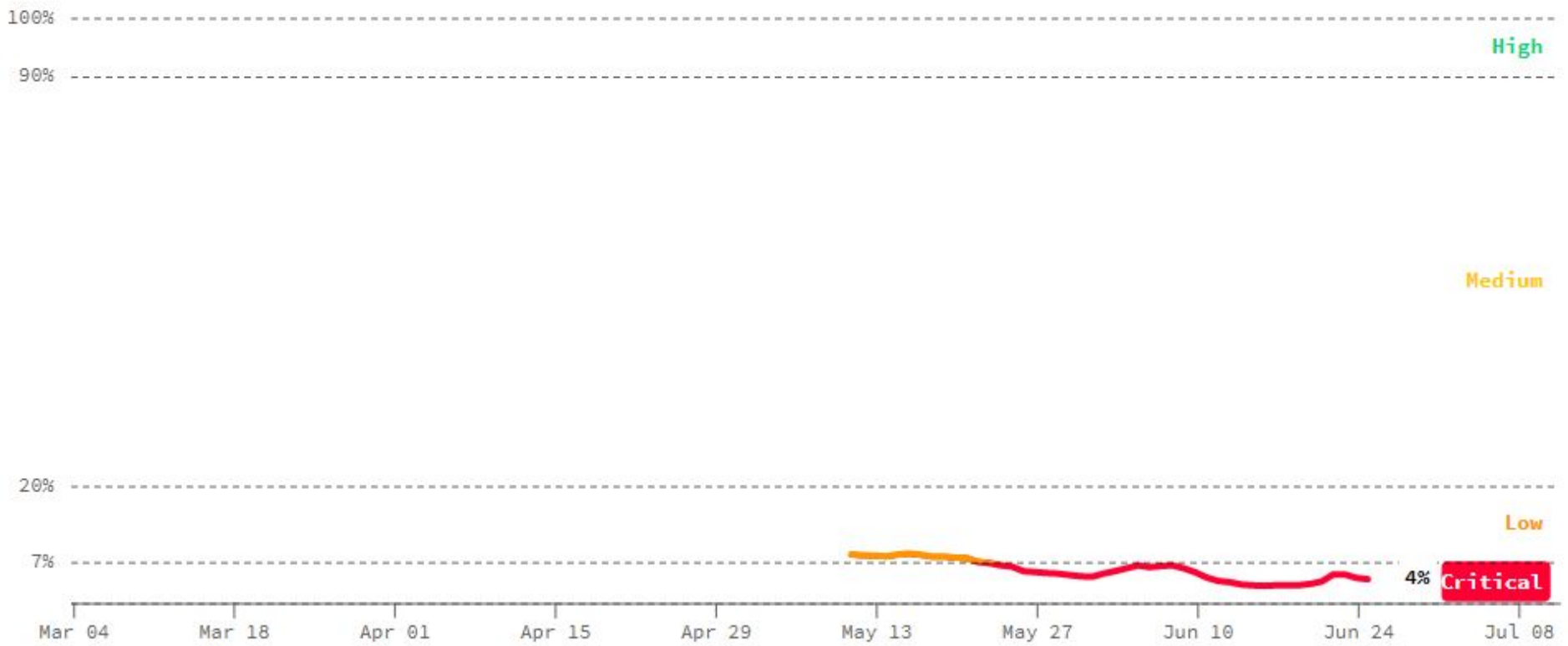


The World Health Organization recommends that before places reopen, they need to record a test positivity percentage below 5% for at least 14 straight days, as many countries with subsiding outbreaks have done. But rather than follow the World Health Organization's benchmark, the CDC and the White House said states can start reopening after falling below 20% percent test positivity.

CONTACT TRACING AL

ALABAMA

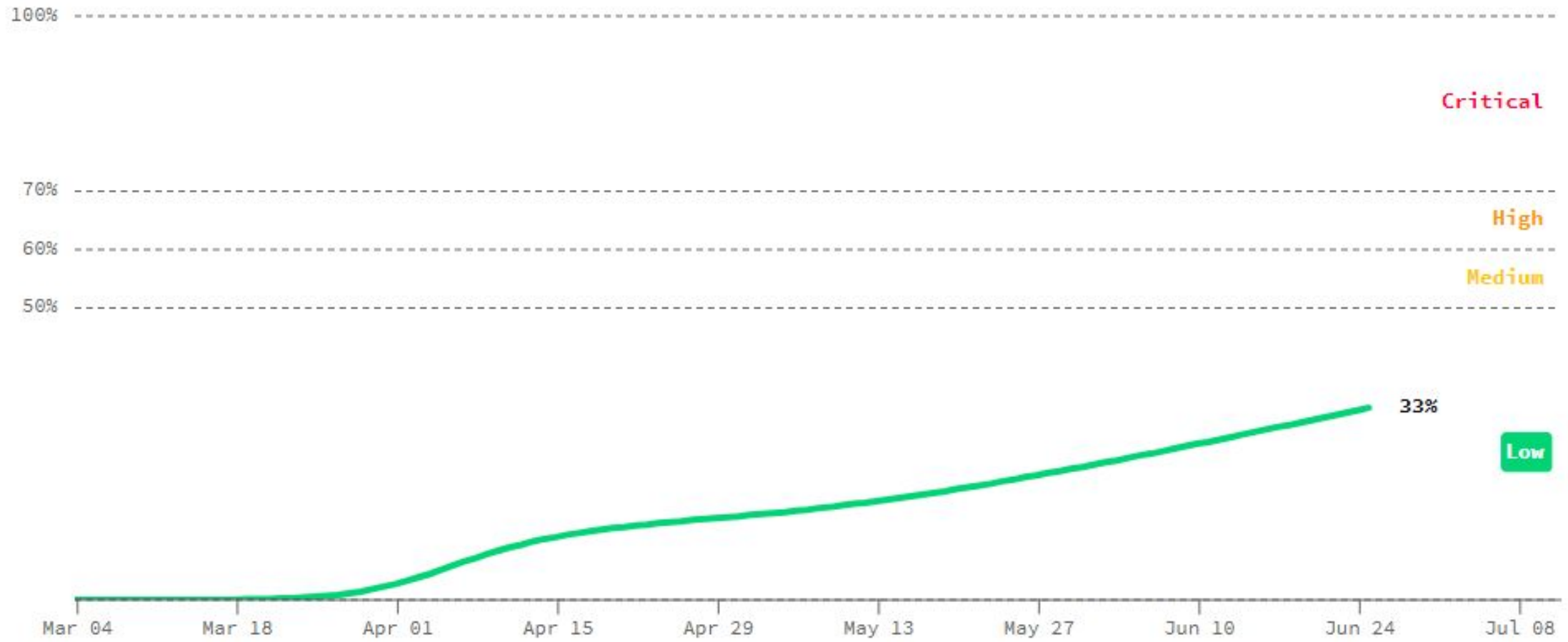
Per best available data, Alabama has 150 contact tracers. With an average of 714 new daily cases, we estimate Alabama needs 3,570 contact tracing staff to trace all new cases in 48 hours, before too many other people are infected. This means that Alabama is likely able to trace only 4% of new COVID infections in 48 hours. These low levels of tracing suggest there may be an active outbreak underway in Alabama, or almost no tracing capacity exists. Aggressive action urgently needed.



As of June 26,2020

ICU HEADROOM USED AL

Alabama has about 1,553 ICU beds. We estimate that 55% (854) are currently occupied by non-COVID patients. With 699 ICU beds remaining, we estimate 230 are needed by COVID cases, or 33% of available beds. This suggests there is likely enough capacity to absorb a wave of new COVID infections.



As of June 26,2020

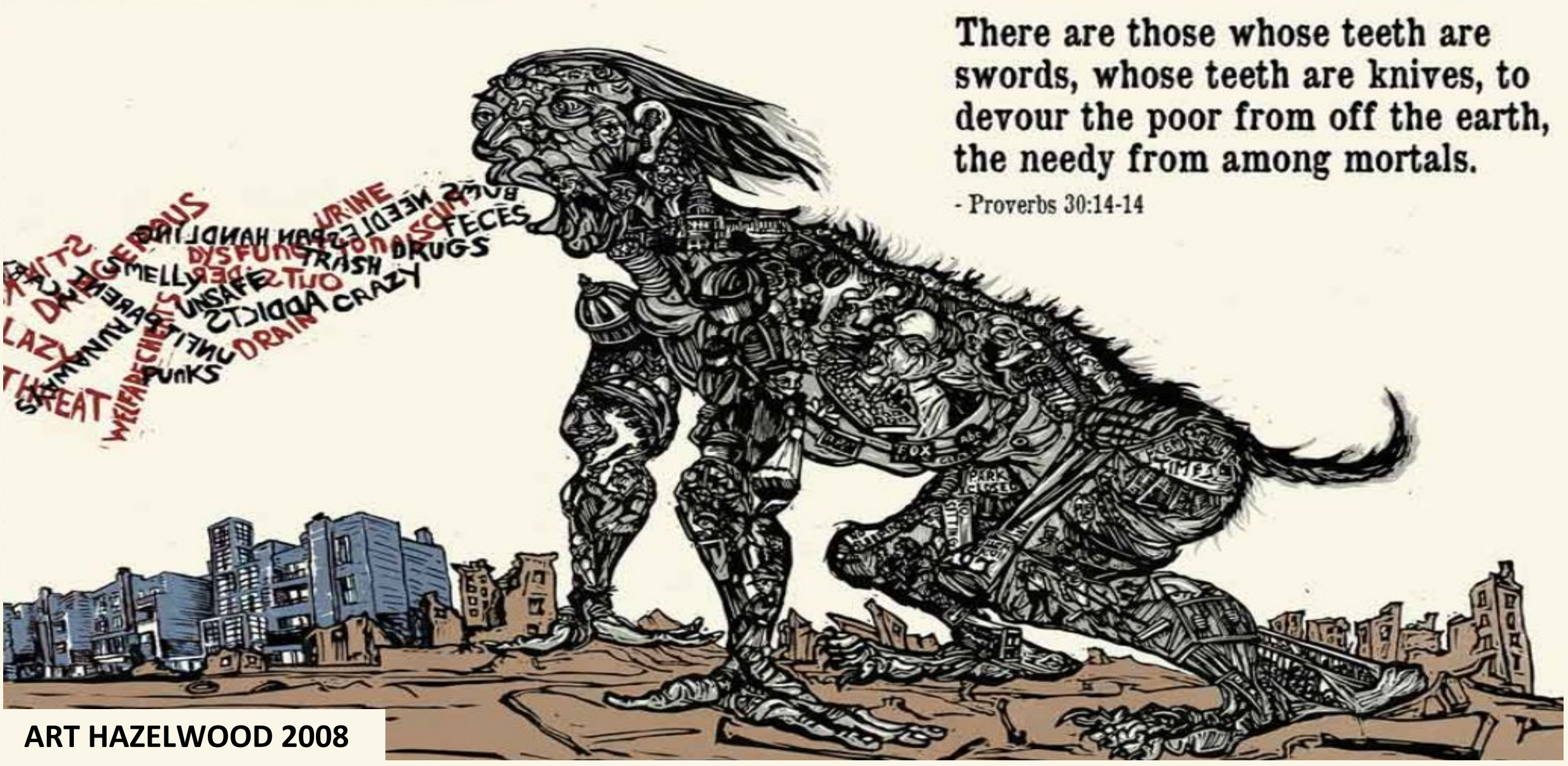
FUTURE FALL INTO FALL

- COVID 19 CONTINUES IN NEW HOT SPOTS IN US
- INTERMITTENT AND LOCAL SHUTDOWNS OF SCHOOLS AND BUSINESSES
- INFLUENZA EPIDEMIC
- SLOW ECONOMIC RECOVERY
- POLITICIZED RELIEF – LOW AND SLOW
- NATIONAL ELECTION
- RANCOR, ANGER

HOW TO AVOID BEING OVERWHELMED BY NEWS AND VIEWS: COVID19 DATA, TIMELINES AND PROJECTIONS

- DATA AND TIMELINES
  - JOHNS HOPKINS: https://coronavirus.jhu.edu/
  - COVIDACTNOW: https://covidactnow.org/?s=58173
  - ALABAMA:POLITICAL REPORTER https://www.alreporter.com/mapping-coronavirus-in-alabama/
- PROJECTIONS
  - Institute for Health Metrics and Evaluation http://www.healthdata.org/

THE BEAST OF HATRED ROAMS OUR LANDS



ART HAZELWOOD 2008

Questions

THE END